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Poster Title: Sphingosine-1-Phosphate (S1P) Stimulation Decreases Vascular Endothelial Growth Factor (VEGF) and Interleukin-8 (IL-8) Secretion in Follicular Thyroid Cancer Cell Lines in Vitro

Authors: A. C. Grover and P. J. Yannie

Departments: Surgery

Background: An estimated 37,340 new cases of thyroid cancer will be diagnosed in 2008. As high as Women will count for 75% of these new cases and over 50% of deaths from thyroid cancer. Although thyroid cancer has an excellent prognosis, an important subset is difficult to treat and radioresistant. Angiogenesis is critical for tumor growth. VEGF and IL8 are pro-angiogenic factors. S1P is a bioactive lipid involved in angiogenesis and an emerging target for cancer therapies.

Objectives: We wanted to determine if S1P would effect VEGF secretion in two follicular thyroid cancer (FTC) cell lines.

Methods: Cell Lines: FTC 133 (primary) and FTC 238 (lung metastasis) Cell Proliferation: Cells were plated in media + 100uM S1P and counted. Elisa: Cells were plated. Media was replaced with: media, media + 100nm S1P or + 100mIU hTSH. Supernatant was analyzed for VEGF and IL-8. Western Blot: Cells were lysed and lysates were run and then blotted. Anti-S1P1 followed by Anti-Rabbit IgG-HRP for detection.

Results: The S1P receptor 1 was present on the surface of both cell lines. S1P treatment had no significant effect on cell growth. Treatment with S1P showed a significant decrease in production of VEGF in both cell lines (percentage decrease): FTC133 35%, FTC238 33%. IL-8 secretion was also decreased (percentage decrease): FTC133 47%, FTC238 10%. Treatment with TSH restored VEGF but not IL-8 secretion.

Conclusions: Treatment of a primary follicular thyroid cancer and one derived from a lung metastasis with S1P decreased VEGF and IL8 secretion without effecting cellular proliferation. The decreases were more pronounced in the primary line. Modulation of S1P or its receptor may be a target for treatment in thyroid cancer.

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Poster Title: 2-Methoxyestradiol Induced Apoptosis in Human Pulmonary Microvascular Endothelial Cells

Authors: Lori B. Sweeney, MD

Departments: Medicine

Background: Primary pulmonary hypertension (PAH) is a relatively rare but lethal disorder characterized by elevations in mean pulmonary artery pressure, right heart failure and poor median survival rates. PAH is characterized by pulmonary arterial vasoconstriction and progressive remodeling of the pulmonary arterioles. PAH preferentially affects women with a female/male ratio of 3:1. This gender disparity has generated important questions regarding the potential role of sex hormones in the progression of the disease, but little attempt has been made to identify a potential causative “female factor” in PAH. The vascular remodeling in PAH is characterized by monoclonal proliferation of apoptosis-resistant endothelial cells. Estradiol has pro-angiogenic and anti-apoptotic effects on human vascular endothelium and may be culprit in the pathogenesis of PAH. It is therefore plausible that potent anti-proliferative metabolites of E2, such as 2-methoxyestradiol could be effective in the management of PAH.

Objectives: The goal of this study was to determine whether 2-methoxyestradiol (2ME), major non-estrogenic estradiol metabolite induces apoptosis of human pulmonary microvascular endothelial cells. Additionally we sought to evaluate whether 2-ME induced apoptosis was associated with induction of ER stress and UPR activation.

Methods: Near confluent human pulmonary microvascular endothelial cells (Lonza) were treated 2-ME (1-10 micromolar) for 48 hours and apoptosis was evaluated by flow cytometry (Annexin V/PI). RNA was isolated from 2-ME treated cells (1 micromolar) and qPCR was performed to assess gene expression of ER stress transcription factors ATF4, BiP, CHOP, EDEM, GADD34 and XBP-1s.

Results: 2-ME induced apoptosis of human pulmonary microvascular endothelial cells in a dose dependent manner. 2-ME treatment resulted in an upregulation of ATF4 (activating transcription factor 4) and the target gene GADD34 (growth arrest and DNA-damage-inducible gene) at 24 hours.

Conclusions: 2-Methoxyestradiol is a potent inducer of pulmonary microvascular endothelial apoptosis and may represent a novel therapy in PAH. Induction of ER stress may be an important mechanism in 2-ME induced endothelial apoptosis.

3 Takabe, Kazuaki, Surgical Oncology Fellow, Surgical Oncology/Biochemistry and Molecular Biology; 804-828-9322; ktakabe@comcast.net

Poster Title: ABC Transporters, ABCC1 and ABCG2, Export Sphingosine 1-Phosphate from Human Breast Cancer Cells in Response to Estradiol

Authors: Kazuaki Takabe, Poulami Mitra, and Sarah Spiegel

Departments: Division of Surgical Oncology, Department of Biochemistry and Molecular Biology, and the Massey Cancer Center

Background: Sphingosine 1-phosphate (S1P) is a sphingolipid metabolite that has drawn considerable attention during the last decade, since it regulates a wide variety of important cellular processes that contribute to tumorigenesis of breast cancer, including cell proliferation, survival, migration and invasion, and angiogenesis. S1P is produced intracellularly by two specific isoenzymes, sphingosine kinase 1 (SphK1) and 2 (SphK2), which have different subcellular localizations and distinct functions. S1P acts in an autocrine or paracrine manner by binding to five specific G protein-coupled receptors. Many studies have linked SphK1 expression to tumorigenicity. SphK1 is overexpressed in breast cancer, and estradiol, a steroid hormone implicated in breast cancer progression, has been shown to stimulate SphK1 leading to activation of S1P receptors, and consequently, transactivation of EGF receptors. However, it is not known how intracellularly produced S1P is exported out of these cells.

Objectives: To examine whether SphK1 and/or SphK2 is responsible for the export of S1P from inside to outside the cells and whether ABC transporters play a role in S1P export from breast cancer cells.

Methods: S1P export was measured by preincubating MCF-7 breast cancer cells with 3H-labeled sphingosine which is converted to 3H-S1P by SphKs. SphK1 and SphK2 were either overexpressed or knocked down using specific siRNAs and effects on export of 3H-S1P determined.

Results: Overexpression of SphK1, but not SphK2, increased S1P export from MCF-7 cells, although both similarly increased intracellular levels of S1P. Conversely, downregulation of SphK1, but not SphK2, decreased export of S1P. Estradiol stimulated synthesis and export of S1P from MCF-7 cells, which was inhibited by MK571, an inhibitor of ABCC1 (multi-drug resistant protein 1), and Fumitrimorgin C, an inhibitor of ABCG2, but not by the ABCB1 inhibitor, Verapamil.

Conclusions: This is the first demonstration that the multi-drug resistant transporters, ABCC1 and ABCG2, are involved in estradiol-induced export of S1P. Further, SphK1, but not SphK2, is responsible for production of the S1P that is secreted from breast cancer cells. Together with the observation that ABC transporters are upregulated in breast cancers, these findings have important clinical implications as exported S1P may play a role in breast tumor progression.

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Poster Title: Genome Stability Genes which Acquire a Function in Breast Cancer Invasion: A New Target Class?

Authors: Steven Bryan, Joni D. Mott, Mina J. Bissell, and Aylin Rizki

Departments: Radiation Oncology, Virginia Commonwealth University and Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California

Background: Acquisition of invasiveness through the basement membrane extracellular matrix is the defining criterion for epithelial cell malignancy in breast cancer.

Objectives: We intend to find new pathways involved in acquisition of invasiveness. Our objectives include determining which genes which normally function in genome stability acquire the ability to regulate invasion.

Methods: Using a human breast epithelial cell model of pre-invasive to invasive transition in ER/PR/HER2 triple negative breast cancers that we had previously developed, we asked whether genes that were upregulated in invasive cells were required in invasion using siRNA based approaches and Boyden chamber assays.

Results: We found some proteins involved in genome stability related functions to acquire a role in regulating invasiveness. We have named these genes GISEM for Genome Instability and Extracellular Matrix Invasion. We found one GISEM gene, Polo-like kinase 1 PLK1 to regulate invasion via a mechanism of phosphorylating vimentin which in turn controls the cell surface levels of $\beta 1$ integrin. Expression of PLK1, vimentin, and $\beta 1$ integrin is very low in normal breast epithelial cells but increases as these triple receptor negative cells acquire invasiveness. It is noteworthy that these three misregulated proteins are able to function together to acquire the ability to contribute to invasiveness in a malignant epithelial context.

Conclusions: Using PLK1 as an example we are currently developing mutagenesis-based approaches to identify the relevant sequences in order to target the acquired invasion functions of GISEM genes without perturbing genome stability. This could provide a potentially less toxic therapeutic approach to treating pre-invasive and invasive breast cancers.

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Poster Title: Trauma Experiences of Women in a Community-Based Primary Care Setting

Authors: Anika A. H. Alvanzo, MD, MS, and Dace S. Svikis, PhD

Departments: Internal Medicine and Psychology

Background: Several studies have demonstrated a relationship between the experience of trauma, particularly physical and sexual violence, and the development of negative physical and mental health consequences. While the prevalence of these traumas has been studied in general populations and in some academic health settings, less is known about the prevalence in community-based primary care populations.

Objectives: The purpose of the current study was to preliminarily describe the trauma experiences (childhood and adult sexual trauma, and threatened or actual physical abuse by an intimate partner) of women receiving treatment in a community-based primary care setting.

Methods: As part of a larger study examining the relationship between trauma and substance use, women completed a self-report battery of questionnaires that included the Trauma Questionnaire (TQ). The TQ, originally developed for use in Veterans Affairs Medical Centers, assesses women's history of childhood and adult sexual trauma, sexual harassment, and partner violence. Self report data from the first 30 women enrolled in the study are reported.

Results: Demographically, women were in their mid forties (mean 45.5, SD 12.24), had completed a mean of 11.8 years of school (SD 2.37), were predominantly Black (93.3%), and predominantly poor, with 69.0% reporting annual household income of < \$15,000. Twenty-one of thirty women (70.0%) reported at least 1 trauma, and on average, participants reported 2.8 lifetime traumas (SD 2.31). Of the 21 women reporting at least one trauma, thirteen women (61.9%) reported being threatened by a spouse or partner and 71.4% reported being physically abused by a spouse or partner. Thirteen of 21 women (61.9%) reported receiving unwanted sexual attention, 47.6% reported childhood sexual abuse, and 52.4% reported being forced to have sex. Just under 1/4 of these women (23.8%) reported ever talking to a doctor about any of these experiences.

Conclusions: Our preliminary results suggest that a history of psychological trauma, particularly physical or sexual violence, is common in women in primary care settings. Yet, few women discuss these experiences with their physicians. These findings have implications for the training of primary care providers who should be trained to recognize and appropriately respond to survivors of such trauma when encountered in the health care setting.

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Poster Title: Exploring Access to Prenatal Care at the Virginia Commonwealth University Health System (VCUHS) Nelson Clinic

Authors: Judith Bradford, Marilyn McLean, and Yvonne Archer

Departments: Epidemiology and Community Health

Background: The Nelson Clinic provides prenatal care for many uninsured African American women, who often enter prenatal care late or fail to attend regularly scheduled appointments. In Richmond, where African American infants have disproportionately high rates of mortality, underutilization of prenatal care places these infants at greater risk for poor birth outcomes.

Objectives: 1) To record the perceptions and experiences of women who receive prenatal care at the VCUHS Nelson Clinic. 2) To identify barriers to receiving adequate prenatal care at Nelson Clinic. 3) To explore ways to improve utilization of prenatal care at Nelson Clinic.

Methods: During the formative phase of this study, we conducted community discussion groups in conjunction with the Richmond Healthy Start Initiative. Formative results supported development of a research protocol for six focus groups conducted in March and April 2008. The study coordinator works with VCUHS staff and community partners to recruit interested women who are at least 18 years old, live in the Richmond area, and received prenatal care at VCUHS during the past year. Flyers advertising the focus groups were distributed to community partners who work with pregnant and post partum women. Interested women contact the study coordinator for phone screening and if eligible, receive a unique registration code and choose an available focus group to attend. Group participants complete a short demographic questionnaire and provide verbal consent to an oral consent form read by the group facilitator. Verbal responses are tape recorded. Each woman receives a \$25.00 Wal-Mart gift card for participating.

Results: Although data collection has not been completed, we will include at least preliminary results in the poster. Several lessons have been learned to date: 1) Community based participatory research projects require a large time investment to ensure that all partners are informed and involved in key decisions; 2) CBPR projects may pose new and unique situations for the Institutional Review Board (IRB); 3) Hard to reach populations may be even harder to reach than first thought, without exceptional outreach and support, which are time and resource intensive; and 4) There is no replacement for active involvement of community representatives and stakeholders.

Conclusions: Although data collection has not been completed, we anticipate completion of a preliminary analysis to produce the Research Day poster. Several lessons have been learned to date: 1) Community based participatory research projects require a large time investment to ensure that all partners are informed and involved in key decisions; 2) CBPR projects may pose new and unique situations for the Institutional Review Board (IRB); 3) Hard to reach populations may be even harder to reach than first thought, without exceptional outreach and support, which are time and resource intensive; and 4) There is no replacement for active involvement of community representatives and stakeholders.

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Poster Title: Barriers and Supports to Teen Pregnancy Prevention among Latina Adolescents

Authors: Rosalie Corona and Raquel Halfond

Departments: Psychology

Background: Teenage pregnancy continues to be a national public health concern, particularly within the Latino community. In 2005, 44% of Latina high school students reported having sex in their lifetime, and few sexually active Latina youth use contraceptives (CDC, 2004). This unprotected sexual activity is associated with significant consequences including unintended teen pregnancy and high rates of sexually transmitted infections (STIs). It is imperative that we better understand the barriers and supports for pregnancy prevention among Latina youth.

Objectives: The proposed study seeks to further expand our knowledge regarding the risk and protective factors associated with Latina adolescent sexual health. Our specific aims are to: (1) Further strengthen our community-academic partnership and assess community needs and priorities for Latina adolescent sexual health; (2) Understand the barriers and supports for Latina teen pregnancy prevention with a particular focus on cultural, family, and media factors; (3) Identify the types of interventions that would be most attractive to Latina adolescents and their mothers (e.g., promotora program, media literacy program).

Methods: We are conducting 8 focus groups with Latina adolescents ages 10 – 17) and their mothers, respectively. We are also conducting two focus groups with pregnant and/or parenting Latina teens and their mothers, respectively

Results: To date, we have achieved the first aim of our study. We have worked with the community to identify needs and priorities for Latina adolescent sexual health. One particular priority is the need for studies to be sensitive to the heterogeneity within the Latino culture. Thus, we have been particularly active in making the study material appropriate for Latina women from different Latino sub-groups (e.g., Mexican, Puerto Rican, etc.). To this end, we have worked closely with a group of community and university women who represent different sub-groups in translating and developing questions. We are currently working with our community partners in recruiting for the focus groups and plan to complete aims 2 and 3 soon.

Conclusions: In conducting community-based research with Latinos, it is important to consider the heterogeneity within the Latino culture. Research has found differences in the sexual and reproductive health of women from different Latino sub-groups further highlighting the importance of cultural sensitivity that goes beyond working with Latinos.

8 Keyser-Marcus, Lori, Assistant Professor, Psychiatry; 804-827-1727; Lakeyser@vcu.edu

Poster Title: When Research Meets Practice: Lessons Learned through Community-Based Participatory Research on Alcohol and Drug Use in Pregnancy

Authors: L. Keyser-Marcus, R. Stith-Singleton, M. Welch., J. Bradford, L. Thomas, M. Stinson, and D. Svikis

Departments: Psychiatry, Psychology, Rehab Counseling, and Wilder School; Richmond Healthy Start, Virginia Dept of Health, and Richmond Women Infants Children (WIC)

Background: Recent reviews of NIH-funded clinical trials have found that the majority are conducted in research-based settings with rigorous controls, stringent inclusion/exclusion criteria, and protocol-driven interventions. While many such studies have identified promising treatments, subsequent efforts to translate them into "real life" settings have yielded discouraging results. A recent IOM report estimated that the average lag time from research study publication to clinical practice is 17 years, and many efforts to move from the research lab to actual practice have met with multiple barriers, ranging from staff and practitioner resistance to practical constraints. The lack of success in such translational efforts have led investigators to explore alternative strategies for the conduct of research, with greater emphasis on collaborative efforts among researchers and community providers, with a focus on practical as well as scientific issues. One promising strategy for fostering such efforts has been Community-Based Participatory Research (CBPR). The present study, funded by the VCU Institute of Women's Health, focused on alcohol and drug problems and their impact on pregnant women. The research literature clearly shows that nearly 90% of women with alcohol and drug problems never seek formal treatment for their disorder. Instead their substance use goes undetected, resulting in a range of adverse medical, social, psychological, and economic outcomes.

Objectives: This poster describes the process of establishing a collaborative relationship with community agencies, and the important lessons learned by researchers and community partners alike. The poster also summarizes the two objectives of the project. The first aim is to implement a standardized screening measure for alcohol and drug problems in this at-risk population of women. The second aim is to test a new intervention that combines a motivational counseling session with a behavioral incentive.

Methods: The effect of the intervention will be compared to that found with standard care.

Results: We hypothesize that women assigned to the intervention group will report greater reductions in alcohol/drug use at 30 day follow-up, and they will be more likely to have followed-through with a substance abuse evaluation than those in standard care comparison group.

Conclusions: If our hypothesis is confirmed, the data will be used to strengthen a collaborative grant application to NIH for funding to conduct a larger-scale randomized clinical trial.

9 Langhorst, Diane, Assistant Professor, Social Work; 804-827-2524; dlanghorst@vcu.edu

Poster Title: Improving Employment Outcomes for Individuals with Substance Dependence

Authors: D. Langhorst, PhD, L. Phipps, Pharm.D, PhD, D. Svikis, PhD, and L. Anderson, MS

Departments: Social Work, Pharmacy, Psychology

Background: There is a strong positive link between drug abuse and unemployment, with the unemployment rate among alcohol and drug dependent individuals ranging from 65-85%. Despite the importance attached to employment, “treatment as usual” for drug dependence generally does not include employment-related services.

Objectives: In order to better understand current employment patterns and barriers to obtaining employment for drug dependent individuals, and to ascertain any gender differences in employment patterns, the VCU research team conducted an interview-based survey with its community partner, Richmond Behavioral Health Authority (RBHA). The present study will provide baseline data for a Phase 2 pilot clinical trial using counselor-focused incentives for target female patients who are actively employed at 3 months. An additional goal will be to identify strategies that counselors used to encourage and motivate women to successfully seek employment.

Methods: For this preliminary Phase 1 study, a 35 item “Job Finding Survey” was constructed and administered over a 3 month period by a research assistant to 44 male and 38 female treatment-seeking RBHA clients following an initial substance abuse unit orientation session. Participants were compensated with a \$5.00 gift card.

Results: Results indicated no significant gender difference for the variable “employment status” ($p=.177$). Likewise, there were no significant differences found in education ($p=.150$), race/ethnicity ($p=.487$) and most barriers to employment. The barrier “gaps in employment history” was identified as more important by more women than men ($p=.037$), while the barriers “been in jail” and “fired from past jobs” ($p=.052$; $p=.047$) were rated as more important by men. There was a significant difference ($p=.036$) in drug of choice; for men, heroin (45.2%) was the primary drug while for women cocaine (42.1%) was primary.

Conclusions: Results of the Phase 1 study will be presented to RBHA Women’s Program staff and the new intervention (counselor-targeted incentives) to be pilot-tested with Institute for Women’s Health seed monies will be discussed. Counseling and administrative staff feedback and recommendations will be solicited. Phase 2 will begin April 2008 and will take 9 months to complete. If findings from the clinical trial of counselor-based incentives targeting client employment are promising, a R01 NIH grant will be submitted in June 2009.

10 Masho, Saba, Assistant Professor, Epidemiology and Community Health;
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Poster Title: A Pilot Study Examining the Impact of Comprehensive Perinatal Access Program among Non-Medicaid Eligible Hispanic Women

Authors: Saba W. Masho and Diane Bishop

Departments: Epidemiology and Community Health

Background: The Greater Richmond Metropolitan area has seen a significant increase in Latino Immigrants in the last six years. In greater Richmond, approximately 46% of all hospital admissions for the Latino population were pregnancy related. Prenatal care is widely acknowledged as the most cost-effective way to improve the outcome of pregnancy for all women and infants. However, there is very little published research on provision of healthcare services, to include perinatal care, to Latina women who are unauthorized US residents, making the best practices for serving this population broadly unknown.

Objectives: To examine the impact of the Perinatal Access Program (PAP) on low birth weight and preterm birth.

Methods: Data on prenatal care for Latina mothers who gave birth in 2006 was obtained from CrossOver Ministries, the Virginia League of Planned Parenthood (VLPP), and Virginia Commonwealth University Health System (VCU HS). Seventy seven women were included in this pilot study. Nearly 55% of the study population received the intervention.

Results: There was no statistically significant difference in the demographic characteristics between the intervention and control groups. However, there was a borderline statistical significance in marital status between the intervention and control groups (Chi square 7.81, p-value= 0.05). The proportion of low birth weight is lower in the intervention group (9.8%) compared to the control group (14.3%). Similarly, the proportion of women with preterm births is lower in the intervention group (8.1%) compared to the control group (11.4%). However, none of these findings were statistically significant.

Conclusions: This pilot study indicated that women enrolled in the PAP program had improved birth outcomes. The lack of statistical significance may be explained by the small sample size in this pilot. Further study needs to be conducted using larger data to confirm this finding.

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Poster Title: Suc Khoe La Quan Trong Hong Sac Dep! Health Is More Important than Beauty: A Breast and Cervical Cancer Intervention for Vietnamese-American Women

Authors: A.B. Nguyen, F. Belgrave, and P. Nguyen

Departments: Psychology and Social Work

Background: Cervical cancer is the most common form of malignancy among Vietnamese American women with an incidence rate of 43 per 100,000 while their White counterparts had an incidence rate of 8.7 per 100,000 (NCI, 1996a). While the difference between Vietnamese and White Americans is not so dramatic for breast cancer (i.e., 37.5 compared to 111.8/100,000; NCI 1996b), as Vietnamese women become acculturated, their incidence rates of breast cancer increases (Ziegler et al., 1993). Vietnamese Americans have the lowest levels of reported Pap testing than any other racial or ethnic group even when compared among Asian subgroups. As many as 40% of Vietnamese American women have never had a Pap test (Lam et al., 2003; Taylor et al., 2004). Also, Vietnamese Americans have low rates of breast cancer screening: as many as 50% have never had a mammogram (McGarvey et al., 2003; Ho et al., 2005).

Objectives: The primary objectives of this research were to implement and evaluate a pilot intervention to increase breast cancer and cervical cancer screening, awareness, intention, and efficacy among Vietnamese women. Secondary objectives were to identify cultural factors that may influence preventive behaviors

Methods: Women were asked to attend a 2-hour intervention session in which they were taught about the topics of breast and cervical cancer. Pre- and post-test questionnaires assessed immediate changes in awareness, intention, and efficacy in screening. The women were asked to come back in 3-4 months to complete post-post test measures to assess longer-term changes in the outcome variables. Afterwards, they participated in focus groups that examined their perceptions, thoughts, feelings, and experiences with the intervention as well as with navigating through the health system.

Results: It was found that the women engaged in low cancer screening rates as evidenced in the literature. The intervention promoted short-term and longer-term changes in awareness, efficacy, and intention. Focus group analyses point to the importance of cultural values in health behaviors for this population.

Conclusions: To impact healthy behaviors, it is important to consider socio-cultural factors when working with minority or ethnic groups. Suggestions for increasing screening behavior for this population include educating not only the women but also husbands, family members, and the community as information is transmitted through informal networks. Also, there is a need for more culturally tailored health programs

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Poster Title: Women, Loss, and Depression: Collaborative Knowledge Building from the Process of Findings of a CBPR Pilot

Authors: Sarah Kye Price, PhD, Katherine Filipic, MSW and Children's Health Involving Parents (CHIP)

Departments: School of Social Work and Children's Health Involving Parents (CHIP)

Background: This community-based participatory research study, funded by the VCU Institute for Women's Health, has expanded both research knowledge and the partnership capacity between Children's Health Involving Parents (CHIP) and the VCU researcher. The purpose of the study was to examine the role of loss and depression in the lives of consumer served by CHIP at program sites in Richmond and Petersburg and work jointly with these programs as well as CHIP of Virginia to create the potential for community-based research which infuses mental health services into CHIP programs statewide.

Objectives: The study's objectives were to 1) explore the ways depression and loss impact the lives of women in local communities of low-income women and families served by CHIP; 2) ascertain staff and consumer preferences around behavioral interventions and desired service delivery options addressing depression and 3) to increase the partnership capacity of the organization and the researcher to collaborative design and develop ongoing opportunities for funded translational research regarding effective delivery of mental health services, particularly for women experiencing perinatal depression.

Methods: Phase 1 of the study conducted consumer focus groups at CHIP of Richmond and CHIP of Petersburg (N=14). Phase 2 of the study conducted individual interviews with CHIP consumers and CHIP staff members (N=24). Thematic analysis from phases 1 and 2 inform Phase 3 of the study in which the VCU-CHIP research team will collaboratively prepare and submit applications for future externally funded research.

Results: Focus group data support that depression and loss are commonly experienced and predictable aspects of life for many low income women. Individual interviews suggest differences between consumers and staff regarding what the assumed preferred interventions and discussions about depression might look like, along with solid support for interventions and research that infuse mental health into community-based maternal and child health promotion.

Conclusions: This poster presentation will discuss the thematic data from CBPR activities, but also outline the process of partnership and collaborative knowledge building between the community and University as an initial step towards future research. In addition, we will highlight this research's contribution to informing future research among faculty and doctoral students in related areas of inquiry.

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Poster Title: Am I Different? A Qualitative Study on Barriers to Colorectal Cancer Screening in Women with Chronic Mental Illnesses

Authors: A. Aggarwal, A. Pandurangi, M. Scherer and A. Kuzel

Departments: Internal Medicine and Family Medicine

Background: At any given time, more than one-fourth of US population has a diagnosable mental illness. Despite recent attention given to enhance colorectal cancer screening in the general population, little is known about the perceptions of barriers to screening among patients with chronic mental illnesses. The principal purpose of this study was to explore psycho-social and behavioral barriers to colorectal cancer screening in this vulnerable population

Methods: We conducted in-depth, face-to face qualitative interviews using a semi-structured interview guide to explore barriers to colorectal cancer screening. Chronic mental health men and women were recruited from an urban, hospital based outpatient mental health clinic in Virginia. Selection criteria included age (> 50 years), diagnosis of chronic mental illness, and psychiatric care for more than one year. Mental illnesses were selected to represent three categories: anxiety, mood and psychotic disorders. Interviews with 15 patients were audio-taped, transcribed and the text was methodically coded. Data were analyzed generating common themes within theoretical categories and contrasts between categories.

Results: In this random group of mentally ill patients, colorectal screening rates were similar to the general population but varied significantly in the three mental illness categories. Anxiety, mood and psychotic patients were very different in their health seeking behaviors. Five patients with anxiety disorders (except one with post traumatic stress disorder) stated no barriers and were seeking more frequent screening than recommended. Barriers in all five mood disorder patients echoed those seen in the general population: access, fear of cancer diagnosis and myths related to cancer. The majority of psychotic patients were afraid of personal harm and generally suspicious of physician intent and actions.

Conclusions: This exploratory study suggests there may be unique and clinically significant obstacles to colorectal cancer screening in patients with anxiety disorders and psychoses. One size, one approach does not fit all. Primary care clinicians may consider tailoring their approach to colorectal cancer screening.

14 Belgrave, Faye, Professor, Psychology; 804 827-3908; zbelgra@vcu.edu

Poster Title: The Role of Family Variables in Smoking and Academic Achievement among African American Girls and Boys

Authors: Faye Belgrave, Sabrina Scott, Khai Nguyen and Trenette Clark

Departments: Psychology

Background: Tobacco use and academic difficulties co-occur among youth. Cigarette smoking is less common among African American than White youth; however smoking increases in adulthood and is higher for African Americans. African American students have a lower level of academic achievement than their white counterparts. Family variables such as family cohesion affect both tobacco smoking and academic achievement. What we know less about is the role of gender in this relationship.

Objectives: We were interested in the influence of family variables on smoking and academic achievement of African American youth during early adolescence. This is the age in which smoking is initiated and when family may have the greatest impact on adolescent smoking and academic behaviors. Further we were interested in how these relationships differ by gender. Our objectives were to determine the 1) relationship between family variables and tobacco smoking; 2) relationship between family variables and academic achievement; and 3) whether these relationships differ for 5th grade boys and girls.

Methods: The sample consisted of 74 5th graders attending rural and urban schools (49 girls and 25 boys). Participants reported whether they had ever smoked a cigarette. Academic achievement was measured with the Academic Motivation scale and the Commitment to School Scale. The three family measures included Family Cohesion, Parental Control, and Parental Monitoring. All scales were valid, reliable, and culturally appropriate.

Results: Correlations were computed between 1) smoking and academic variables; 2) family variables and smoking; and 3) family variables and academic variables separately for boys and girls. For all youth, parental control was correlated with smoking. For boys, there were significant correlations between smoking and achievement motivation and commitment to school. Also, among boys, all three family variables (family cohesion, parental control, and parental monitoring) were significantly related to both achievement motivation and commitment to school (a total of six significant correlations). For females, there were only two significant correlations (e.g., family cohesion and achievement motivation and parental control and commitment to school).

Conclusions: The findings suggest that parental factors might be more influential in boys than girls' behavior. These findings suggest a need for more research on factors that prevent and promote smoking and academic achievement among African American girls.

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Poster Title: Ten Years of Benchmarking: Monitoring Women Faculty at VCU School of Medicine

Authors: Diane L. Bishop, Carol L. Hampton, MMS, Rita Shiang, PhD, and Saba W. Masho, MD, MPH, DrPH

Departments: Epidemiology and Community Health, Faculty and Instructional Development, and Genetics

Background: While women make up nearly half of all medical school graduates, they continue to remain underrepresented in terms of proportion of faculty, rank, and tenure status when compared to their male counterparts. The Committee on the Status of Women and Minorities (COSOWAM) at the VCU School of Medicine (SOM) provides leadership and guidance regarding the progress of women and minorities. COSOWAM monitors trends and presents annual benchmarking.

Objectives: The objectives of this study are to describe the status of VCU-SOM women faculty, compare faculty data to the national averages, and to examine trends among women faculty.

Methods: A snapshot of full-time, ladder-ranked SOM faculty data from 1997 through 2006 was analyzed. The number and proportion of women faculty, time in rank, and tenure status were examined. The VCU-SOM data was compared to national averages provided by the American Association of Medical Colleges (AAMC).

Results: The proportion of women faculty increased from 30% in 1997 to 34% in 2006, which was consistently higher than the national averages. Marked increases were observed among the proportion of women full professors by nearly threefold and of tenured women faculty by 43% over the ten years. In 2006, women represented 15% of department chairs compared to 10% nationally. Notable gender differences were observed in academic ranking. In 2006, 49% of women were at the assistant professor rank compared to 35% of men but only 16% of women were full professors compared to 37% of male faculty. However, there were no statistically significant gender differences in length of time in rank of assistant and associate professors. There were significant differences in tenure status. In 2006, 20% of women faculty were tenured, 6% were tenure eligible, and 74% were non-tenure eligible compared to male faculty at 36%, 5%, and 59%, respectively (p-value=0.000).

Conclusions: Although the proportion of women faculty and department chairs at VCU-SOM was higher than the national average, women tended to be at a lower academic rank compared to their male counterparts. However, there was no gender difference in the length of time in rank. Reasons for women to be in lower academic ranks should be investigated. Continued efforts are needed to recruit more women and to move women into higher academic ranks.

16 Boice, Emily, Ph.D. candidate, Microbiology and Immunology; 804-828-2316;
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Poster Title: Characterization of the Conserved Residues in the Propeptide of *Pseudomonas Aeruginosa* Elastase for Roles in Chaperone Function

Authors: Emily Boice, Efrat Kessler, and Dennis E. Ohman

Departments: Microbiology and Immunology, Virginia Commonwealth University and Veterans Affairs Medical Center, Richmond, Virginia

Background: A number of pathogenic organisms are commonly associated with women's urinary tract infections, a critical contributor being *Pseudomonas aeruginosa*. This organism secretes several proteases associated with pathogenesis, but the most abundant and active protease among them is elastase, a metalloendopeptidase of the thermolysin family (M4). Elastase is encoded by *lasB* and is secreted into the medium by the Xcp type-II secretion apparatus. Elastase is first synthesized as a preproenzyme, with a signal peptide, a central 18-kDa propeptide, and a 33-kDa mature domain. The propeptide functions as an intramolecular chaperone and is required for the secretion and activity of elastase. In vivo studies show that the propeptide as a separate protein will still permit efficient secretion of an active protease.

Objective: To further understand the mechanisms involved in the propeptide-mediated folding of elastase, in vitro studies were performed on the ability of purified recombinant propeptide to fold a denatured form of wild-type elastase.

Methods: Propeptide was produced from a pET vector in *E. coli* BL21(DE3) and included a His tag on the carboxy terminal. The propeptide was purified from cell lysates by affinity Ni-chromatography. Elastase was over-produced by a *lasB* mutant of strain PAO1 (i.e., PDO240), with *lasB* expressed from a plasmid under an IPTG-inducible *tac* promoter. Elastase was purified from the supernatant by 60% ammonium sulphate and ion exchange chromatography. Purified propeptide and elastase were then denatured individually in a guanidine-HCl / glycine buffer, and then renatured together by dialysis treatment. The samples were treated with trypsin to release the propeptide from elastase, and elastolytic activity was analyzed by elastin congo red and azocasein assays.

Results: To better understand the protein-protein interactions between the propeptide and mature domain, we are testing mutant propeptides on the ability to properly fold elastase, which included an N-terminal 12 amino acid tag. The results show that both wild-type propeptide and C-terminal tagged propeptide were capable of refolding a denatured elastase into an active enzyme.

Conclusions: This suggests that a C-terminal extension did not prevent the propeptide from refolding its mature enzyme. Other experiments are in progress, using site-directed mutagenesis of the propeptide, to determine the role of conserved residues in the propeptides of other thermolysin-like neutral proteases and their role in folding and secretion.

17 Bradford, Judith, Associate Professor, Epidemiology and Community Health;
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Title: Faculty Development Seed Grants in Community-Based Participatory Research

Authors: Judith Bradford, PhD, Janett Forte, MSW, Dace Svikis, PhD, Susan Kornstein, MD

Background: Racial and cultural minority women in the Richmond area are far more likely than their white counterparts to live with difficult health issues such as teen pregnancy, depression, substance abuse, inadequate prenatal care and pregnancies that end in poor birth outcomes. These challenges and others are related to social and economic factors that disproportionately target these population groups, many of whom live in chaotic neighborhoods and are themselves the targets of violence. No formal system of comprehensive health promotion and health care for women currently exists in the Richmond area. In recent years, a number of organizations have begun to work together to better understand women's health needs and to consider initiatives that could make a difference. In late 2006, Virginia Commonwealth University's Institute of Women's Health developed a seed grants program for faculty who wished to conduct research that could benefit Richmond area women, working in conjunction with community organizations.

Objectives: Support pilot studies on priority health concerns of women and girls in the Richmond area; Develop faculty capacity to conduct community-based participatory research through skills building, group interaction, and consultation; Improve the health of women and girls in the Richmond area through the translation of research findings into education and programs that benefit the population.

Methods: Grants were awarded through a peer review of submitted applications, following the process used by the National Institutes of Health (NIH). A review panel of faculty from schools on both campuses and community representatives scored proposals on scientific merit and fidelity to the principles of community-based participatory research (CBPR), ranked proposals in order by consensus of the panel, and determined awardees. Eight competitive applications and one demonstration project were funded.

Results: Grantees represented academic disciplines across the university, including internal medicine, psychiatry, public health, psychology, public policy, and social work. Together, they engaged more than 20 public and community-based organizations as partners. Project objectives have been met, with resounding success. Although most of the grantees were new or relatively new to CBPR, all participated in group discussions about this approach, sharing their experiences and learning from each other. Several projects faced obstacles that could not be overcome within available time and resources, resulting in creative ways to adapt original plans to actual situations, with the involvement and assistance of community partners. Grantees express great enthusiasm for their experiences, for the opportunity to use CBPR methods and the realization of how this approach enables them to expand the breadth and depth of their research. Most have presented their results to a variety of audiences and have submitted or are developing proposals for continued research that builds from their IWH seed grants.

Conclusions: Seed grants are a viable method for assisting junior faculty to initiate original research that can be further developed into a sound basis for research careers. With community-based research, where so much depends on relationship building and collaborative principles, the opportunities for group learning and skills building were highly valued by grantees.

18 Brunzell Darlene, Assistant Professor, Pharmacology and Toxicology; 804-628-7584; dbrunzell@vcu.edu

Poster Title: Nucleus Accumbens CREB Regulates Nicotine Reward

Authors: Darlene H. Brunzell, Rachael Neve, Marina R. Picciotto

Departments: Pharmacology and Toxicology, VCU/MCV, McClean Hospital, Harvard Medical School, Psychiatry, Yale University School of Medicine

Background: Nicotine, like other drugs of abuse, exerts its rewarding effects in part via regulation of the VTA-accumbens dopamine (DA) pathway. DA receptors in turn regulate phosphorylation (activation) of the transcription factor, CREB. Repeated nicotine exposure decreases phosphorylation of CREB in the nucleus accumbens of male and female C57BL/6J mice.

Objectives: The purpose of this research was to determine whether infusion of a dominant negative mutant CREB (HSV-mCREB) into the nucleus accumbens would affect nicotine reward as measured using an unbiased nicotine conditioned place preference (CPP) paradigm.

Methods: Animals received repeated pairings of nicotine or saline with one of two equally preferred but discriminatively different, isolated chambers. Vector control subjects received infusions of (HSV-LacZ) into the nucleus accumbens and behavioral control subjects received saline in both chambers.

Results: Here we show that HSV-LacZ-infused mice acquire place preference to the nicotine-paired chamber in a dose-dependent manner, and infusion of HSV-mCREB into the nucleus accumbens blocks nicotine CPP.

Conclusions: These data suggest that regulation of CREB is important for nicotine reward and that chronic exposure to nicotine opposes these processes.

Disclaimer: This research was supported by DA14241, DA00436, and DA13334, and a Leiber NARSAD Young Investigator Award.

19 Cappello, Renato, Ph.D. fellow, Obstetrics and Gynecology; 804-828-8468; rcappello@vcu.edu

Poster Title: Epigenetic Control of Collagen Regulating Genes in Vascular Smooth Muscle

Authors: Renato Cappello, Guadalupe Estrada, Phillip M. Gerk, Jerome F. Strauss III, and Scott W. Walsh

Departments: Obstetrics and Gynecology, Internal Medicine, Pharmaceutics, and School of Medicine

Background: Epigenetics is the control of gene expression independent of changes in the DNA sequence. DNA methylation is a major epigenetic mechanism to silence gene expression and may serve as a protective mechanism to maintain cell integrity of tissues. Collagen is an important protein that maintains the structural integrity of tissues. Disruption of the smooth muscle collagen could result in vascular dysfunction in women with preeclampsia. 5-Aza-2'-deoxycytidine (5-Aza) inhibits DNA methylation, and so, can be used to study regulation of gene expression by DNA methylation. We hypothesized that epigenetic regulation of collagen regulating genes would be present in vascular smooth muscle cells (VSMC).

Objectives: Identify if some collagen regulating genes are under epigenetic regulation in VSMC.

Methods: Primary cultures of human vascular smooth muscle cells (VSMC) were seeded into T-25 flasks (40,000 cells/flask) and grown for 3 days to 70% confluence. The cells were treated for 24 hours with medium control or 5-Aza (10uM). RNA was extracted from cell homogenates and analyzed for gene expression with an RT2 Profiler PCR Array System for Human Extracellular Matrix Genes (SuperArray). To determine the fold-change of gene expression, the results were first normalized to a housekeeping gene and then Ct was calculated across two RT-PCR arrays where group 1 was the control and group 2 was the experimental treatment.

Results: 5-Aza increased MMP-1 expression 3-fold, while genes involved in collagen synthesis (COL1A1) or inhibition of MMP-1 activity (TIMP-1) were not affected.

Conclusions: These data suggest that collagen breakdown is epigenetically regulated, but collagen synthesis is not. Epigenetic regulation of MMP-1 may be a protective mechanism to silence MMP-1 expression and prevent collagen breakdown under non-inflammatory conditions. This regulation may be lost in women with preeclampsia. HL069851, Fogarty 5D43TW007692, P60MD002256.

20 Cheang, Kai, Assistant Professor, Pharmacy; 804-828-2257; kicheang@vcu.edu

Poster Title: Long-Term Metabolic Effect of Metformin in Women with Polycystic Ovary Syndrome with and without the Metabolic Syndrome

Authors: Kai I. Cheang, Al M. Best, Jessica M. Huszar and John E. Nestler

Departments: Pharmacy, Biostatistics, and Internal Medicine

Background: Women with the polycystic ovary syndrome (PCOS) have a high prevalence of the metabolic syndrome (MBS). Metformin's effects on the MBS in PCOS are unknown.

Objectives: We hypothesized the beneficial effects of metformin on MBS components would be more marked in women with co-existing PCOS and MBS than in women with PCOS alone.

Methods: We performed a retrospective chart review of consecutive PCOS patients from 1999-2005 from a single academic clinic, and assessed the effect of metformin on MBS parameters. Patients were included if they had PCOS, took metformin for 6 months, and had baseline and follow-up MBS parameters assessed. Exclusion criteria include diabetes and use of other insulin sensitizers. MBS was defined by ATP-III criteria, substituting BMI (32 kg/m²) for waist circumference (88cm). Changes in MBS parameters across follow-up time in the MBS and non-MBS women were evaluated with random coefficient models with repeated-measures analysis.

Results: 71 PCOS patients, aged 31.2 +/- 10.7 yrs, were followed for 33.3 +/- 22.5 months. HDL (mg/dL) increased from 53.0 to 56.9 (p=0.005) in non-MBS women with PCOS and it increased from 44.6 to 49.4 (p=0.0134) in PCOS women with MBS. Systolic BP (mmHg) improved from 125.7 to 120.2 in PCOS women with MBS (p=0.0281), but no significant change was observed in women without MBS. BMI improved in both groups--from 28.7 to 28.6 kg/m² in non-MBS women (p=0.0185); and from 37.9 to 36.1 kg/m² in MBS women (p=0.0189). Metformin treatment was not associated with a significant change in diastolic BP, triglycerides or fasting glucose in either the MBS or the non-MBS groups. The prevalence of MBS was 29.1% (CI 26.4-78.4%) at baseline, and 13.2% (CI 6.6%- 24.2%) after metformin therapy.

Conclusions: Over a mean of 33.3 months, metformin significantly improved BMI and HDL in all PCOS women. Systolic BP was improved only in PCOS women with MBS. Overall, metformin's benefit on MBS parameters was more evident in PCOS women with MBS before metformin treatment. Metformin also significantly decreased the prevalence of MBS in women with PCOS.

21 Cheang, Kai, Assistant Professor, Pharmacy; 804-828-2257; kicheang@vcu.edu

Poster Title: Relative Importance of Obesity, Insulin Resistance and Metabolic Syndrome in the Elderly: Risk of Cardiovascular Events

Authors: Kai I. Cheang, Julie Villanueva, Hala H. Zreikat, and John E. Nestler

Departments: Pharmacy and Internal Medicine

Background: Obesity, insulin resistance (IR) and the metabolic syndrome (MetS) have all been associated with increased risk of cardiovascular (CVD) events.

Objectives: We sought to assess the relative contribution of obesity, as compared to IR and MetS, in incident CVD events in elderly individuals.

Methods: We utilized the Cardiovascular Health Study database in which participants (age > 65 years) underwent extensive baseline interviews and examinations for CVD risk factors, and were prospectively followed for 11 years to ascertain CVD events. We determined obesity (classified by BMI), ATP-III defined MetS, and IR (defined as the upper quartile via HOMA) in non-diabetic individuals at baseline and their relationship with CVD events.

Results: After 11 years of follow-up, the total cumulative incidence for CVD events was 27.4% in 3050 participants. Figure shows incident CVD events in individuals, stratified by BMI, with and without MetS, and with and without IR. MetS was the most robust and consistent predictor of CVD events, and BMI alone did not contribute to CVD risk. IR was not associated with increased CVD risk in the elderly.

Conclusions: MetS, rather than obesity, may be a more important predictor of CVD risk in the elderly. IR as defined in this study was not associated with CVD risk in the elderly.

22 Cohen, Jessye, Graduate Student, Psychology; 804-301-3621; s3jcohen@vcu.edu

Poster Title: Identifying Predictors of Unwanted Sexual Contact in Undergraduates

Authors: Jessye Cohen, MS and Sherry Ceperich, PhD

Departments: Psychology, Virginia Commonwealth University and Psychiatric Medicine, University of Virginia

Background: Undergraduates are engaging in risk-taking behaviors earlier and with greater frequency than in previous years. Undergraduates are initiating drinking, substance use, sexual risk behavior, and other risky behaviors earlier and with greater frequency than in previous years. Sexual assault has been identified as a prominent consequence of drinking. In order to prevent incidents of sexual violence and unwanted sexual contact, it is important to understand predictors of these behaviors. However, research in this area is limited.

Objectives: This study aimed to identify predictors of unwanted sexual contact. It was predicted that gender, average number of weekly drinks, and number of sexual partners in the past year would be significant predictors of unwanted sexual contact.

Methods: Participants were 1,810 undergraduates from a medium-sized Mid-Atlantic university. A survey consisting of 33 open-ended and forced-choice questions queried undergraduate students about demographics and health behaviors including substance use and its consequences, sexual behaviors, perceptions of “typical” student substance use, and seeking help.

Results: A logistic regression analysis was performed to investigate whether the identified variables predicted the occurrence of unwanted sexual contact. A test comparing the full model to a constant-only model was statistically significant $\chi^2(1) = 98.71, p < .01$, indicating that gender, number of sexual partners, and average weekly drinking reliably distinguished whether a participant experienced unwanted sexual contact. In the model, 90.8% of the cases were correctly predicted. However, it should be noted the Hosmer and Lemeshow goodness of fit test is significant, indicating that this model may not be a good fit for the data. Furthermore, though the percentage of correctly identified cases was high, the improvement over the constant-only model was marginal.

Conclusions: The results supported the hypothesis that gender, alcohol consumption, and number of sexual partners predicted unwanted sexual contact. Gender was the strongest predictor in this model. However, these results should be interpreted with caution due to the small effect size and the indicators that the model is not a good fit to the data. The results of this study are consistent with, but less powerful than, findings in the literature. Several limitations to this study should be considered. Future research should improve the precision of predictor variables.

24 Depcrynski, Amy, Graduate Student, Human and Molecular Genetics/Pathology; 804-827-0510; andepcry@vcu.edu

Poster Title: Regulation of the Telomere Binding Protein, TRF2

Authors: Amy Depcrynski, Lynne Elmore, and Shawn Holt

Departments: Human and Molecular Genetics, Pathology, Pharmacology and Toxicology, Massey Cancer Center

Background: The primary function of telomeres is to protect the ends of chromosomes from being recognized as damaged DNA, resulting in exonuclease degradation and end-end fusion. To aid in this, telomere associated proteins, such as TRF2, form protein/DNA complexes that protect the telomere. Molecular chaperone proteins such as Hsp90 and p23 also have been found to be associated at the telomere, presumably through an interaction with telomerase, the ribonucleoprotein enzyme that synthesizes telomeric repeats after cell division. Data suggests that Hsp90 and p23 associate with the telomere independently of telomerase, suggesting a role for chaperones in the maintenance of telomere structure and function.

Objectives: The current study examines this chaperone/TRF2 association in various breast and lung cancer cell lines and normal fibroblasts in order to define the telomeric consequences of blocking Hsp90 function. It also examines TRF2's post-translational modification by ubiquitin and sumoylation.

Methods: In various cancer and normal cell lines we are using immunoprecipitation and Western blots to determine specific interactions between TRF2 and chaperones. Pharmacologic inhibition of Hsp90 further examines the mechanisms behind these interactions. In an effort to determine the functional significance of the post-translational modifications, we are generating various TRF2 fusion proteins and mutants to examine the role SUMO and ubiquitin play in regulating TRF2.

Results: Recent experiments have shown an interaction between TRF2 and Hsp90, which is disrupted through pharmacologic inhibition of Hsp90. We have also shown an interaction between TRF2 and Hsp70 and p23. We have observed that TRF2 is post translationally modified by two separate but related mechanisms: ubiquitination and sumoylation.

Conclusions: TRF2 is an important protein at the telomere whose main function is to protect the telomere ends, preventing telomere dysfunction and genomic instability. Elucidation of the regulation of TRF2 will provide not only a better understanding of its role in telomere biology but may also provide additional pathways for inducing telomere dysfunction in cancer cells.

25 Dibble, Ashley, Graduate Student, Clinical Psychology; 434-996-7300; engelsad@vcu.edu

Poster Title: Physiological Correlates of Aggression in Adolescent Females

Authors: Ashley Dibble and Wendy Kliewer

Departments: Psychology

Background: Recent research has shown that two markers of physiological response to stress – α -amylase and cortisol – interact to predict parent-reported aggression in at-risk youth (Gordis, Granger, Susman, & Trickett, 2006). Low levels of physiological reactivity to a stressor were associated with higher levels of aggression. Researchers in this area have focused on males or have not examined gender differences, thus we do not know how well these findings apply to females.

Objectives: This study expands on work by Gordis et al. (2006) and other researchers by using a larger sample, focusing on female adolescents, examining both physical and relational aggression, and utilizing parent and adolescent reports of aggressive behavior. Based on prior literature, I expected that lower levels of cortisol reactivity coupled with higher levels of α -amylase reactivity would be associated with lower levels of aggressive behavior.

Methods: Adolescent females ($n = 49$, 92% African American, M age = 13.1) participating in a larger longitudinal study on violence, stress responses, and drug use served as the sample. Changes in physiological responses were monitored during the Social Competence Interview (SCI). Aggression was measured using the Child Behavior Checklist, reported by caregivers, and Problem Behavior Frequency Scales, which were self-reported.

Results: Hierarchical regression analyses controlling for age, race, pubertal status, medication usage, and time of day were used to examine the hypotheses. For the physiological measures, Area Under the Curve was calculated to capture hormonal output and increase during the stress task. A significant interaction between for AUCG cortisol and AUCG α -amylase was found for adolescent-report physical aggression, $\hat{\alpha} = .316$, $p < .05$. A main effect was found for parent-report aggression and cortisol Area Under the Curve Ground, $\hat{\alpha} = .540$, $p < .05$, and cortisol Area Under the Curve Increase, $\hat{\alpha} = .498$, $p < .05$, but it was not in the predicted direction. There were no main effects for α -amylase reactivity and parent-report aggression.

Conclusions: These results provide support for the hypothesis that asymmetry in cortisol and α -amylase predicts lower levels of aggressive behavior. Studying a child's physiological reactions to stress can give insight into behavior regulation, help identify children for prevention/intervention, and serve as markers of treatment progress.

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Poster Title: Chaperone Expression and Inhibition in Breast Cancer

Authors: Malissa C. Diehl, Michael O. Idowu, Katherine Kimmelshue, Timothy P. York, Lynne W. Elmore, and Shawn E. Holt

Departments: Departments of Human and Molecular Genetics, Pathology, Pharmacology and Toxicology, Massey Cancer Center, and the Virginia Institute for Psychiatric and Behavioral Genetics, Virginia Commonwealth University

Background: Previous data has shown that Hsp90 and its co-chaperone, p23, remain stably associated with active telomerase to ensure proper assembly. Using clinical prostate specimens, normal and benign prostatic hyperplasia displayed low levels of chaperones while carcinomas showed elevated levels. Accordingly, an experimental prostate cancer system has shown that telomerase activity increases during malignant progression due to an upregulation of chaperone proteins, rather than hTERT itself. However, this activity can be acutely and transiently reduced with Hsp90 inhibitors.

Objectives: Since the role of chaperone proteins have not been well-defined during mammary carcinogenesis, the present study examines protein expression and localization patterns of Hsp90 and p23 in clinical specimens of benign, ductal carcinoma in situ, and invasive breast carcinomas to ascertain whether previous observations are prostate-specific. Furthermore, we want to characterize Hsp90 inhibition as a method of sensitization in breast cancer cells.

Methods: Tissue microarrays containing normal, DCIS, invasive breast tissue, cancer cell lines, and non-breast specific cores were immunohistochemically stained for Hsp90 and p23. Cores were scored for reactivity, intensity, and cellular localization and statistically analyzed to assess whether significant differences emerge as malignancy progresses. For Hsp90 inhibition studies, MCF7 cells were treated with radicicol for two days. During this time, cell growth and telomerase activity were determined at 4, 24, and 48 hrs post-treatment.

Results: Based n tissue array data, Hsp90 expression does not appreciably differ in either nuclear or cytoplasmic locations as malignancy increases. Similarly, p23 expression does not differ between normal, DCIS, and invasive carcinomas in the cytoplasm; however, nuclear staining does appear to be significantly different in the three disease types ($p=0.0174$). Although Hsp90 expression may not differ in tissue, there are likely functional differences between normal and cancerous cells, as breast cancer cells show Hsp90-dependent growth and a steady reduction in telomerase activity over 48hrs.

Conclusions: These tissue microarrays may serve as the preliminary data underlying mechanistic studies on the role of chaperones during cancer progression. Defining these roles in clinical specimens may provide critical information on the utility of targeting Hsp90 in vitro in combination with traditional modalities to increase sensitivity and decrease toxicity.

27 Estrada, Guadalupe, Ph.D. fellow, Obstetrics and Gynecology; 804-828-8468; gestradaguti@vcu.edu

Poster Title: Neutrophils Alter Expression of Vascular Smooth Muscle Collagen Regulating Genes

Authors: Guadalupe Estrada, Renato Cappello, Jerome F. Strauss III, and Scott W. Walsh

Departments: Obstetrics and Gynecology, and School of Medicine

Background: Collagen is an important protein that maintains the structural integrity of tissues. Disruption of vascular smooth muscle collagen could result in vascular dysfunction in women with preeclampsia. Recently, neutrophil infiltration of the systemic vasculature was demonstrated in preeclamptic women. Neutrophils produce inflammatory mediators, such as reactive oxygen species (ROS) and TNF- α . We hypothesized that neutrophils, ROS and TNF- α would alter expression of collagen regulating genes.

Objectives: To determinate if treatment with neutrophils, ROS or TNF- α alters the expression of collagen regulating genes in vascular smooth muscle cells.

Methods: Primary cultures of human vascular smooth muscle cells (VSMC) were seeded into T-25 flasks (40,000 cells/flask) and grown for 3 days to 70% confluence. The cells were treated for 24 hours with medium control, ROS (HX, 0.05 mM + XO 0.003 U/ml), TNF- α (1 ng/ml); and neutrophils (60,000) activated with arachidonic acid, 50 μ M, (1:16 ratio of neutrophils to VSMC). RNA was extracted from cell homogenates and analyzed for gene expression with an RT2 Profiler PCR Array System for Human Extracellular Matrix Genes (SuperArray). To determine the fold-change of gene expression, the results were first normalized to a housekeeping gene and then Ct was calculated across two RT-PCR arrays where group 1 was the control and group 2 was the experimental treatment.

Results: Neutrophils, ROS and TNF- α increased MMP-1 expression (4.84, 25.28 and 13.70 fold-change, respectively). Interestingly, genes involved in collagen synthesis (COL1A1) or inhibition of MMP-1 activity (TIMP-1) were either not affected or down-regulated.

Conclusions: These data suggest that neutrophil infiltration in preeclamptic women could cause vascular dysfunction by creating an imbalance between collagen synthesis and collagen breakdown favoring breakdown. HL069851, Fogarty 5D43TW007692, P60MD002256.

28 Fitzgerald, Angela, Graduate Student, Social Psychology; 804-355-1583;
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Poster Title: Partner Condom Attitudes and Condom Negotiation Efficacy As Predictors of Condom Use and Intent among African American Women in Long Term Relationships

Authors: Angela Fitzgerald, Brittany Black, Ashleigh Leftwich, Lavonna Martin, and Nadjie Carew

Departments: Psychology

Background: HIV is the leading cause of death for African American (AA) women between the ages of 25-34, and the rates of infection for these women are increasing most rapidly from heterosexual contact. The most widely advocated and endorsed method for women to protect themselves has been the male condom. However, condom use requires that women possess the ability to successfully negotiate condom use with her partner. Condom negotiation efficacy, or women's ability to negotiate condom use, is a factor that can influence whether condoms are used. Her partner's attitudes towards condoms can affect women's ability to negotiate condom use. Partner attitudes towards condoms may be a hindrance to condom use particularly within long term relationships, where condoms may be seen as interfering with relationship trust. Therefore, it is important to consider male partner attitudes, along with women's ability to negotiate condom use, as factors that can impact condom use and AA women's HIV risk for AA women who are in long-term relationships.

Objectives: In this study we examine the relationship between partner condom attitudes, condom negotiation efficacy, condom use and intent among a group of AA women ages 18-35 who are in long-term relationships.

Methods: AA women over the age of 18 were recruited from community and college settings in central Virginia to participate in an HIV prevention program. These analyses used pre-test data collected prior to the intervention. Several measures of drug and sex attitudes and use were collected from over 400 women. Analyses were only performed on women who were ages 18-35 and reported having a main partner, and who have been with their partner for a least one year.

Results: Level of education, relationship length and partner condom attitudes significantly contributed to condom negotiation efficacy. Age, partner condom attitudes and condom negotiation efficacy significantly contributed to condom use and intent.

Conclusions: The findings from this study highlight the need to consider how the relationship context contributes to AA women's HIV risk, and can inform the development of effective methods of HIV prevention for AA women in long-term relationships.

29 Foster, Rebecca, Doctoral Student, Psychology; 804-827-1356; fosterrh@vcu.edu

Poster Title: Caring for a Child Diagnosed with Smith-Magenis Syndrome: Preliminary Analysis of Caregiver Well-Being

Authors: Rebecca H. Foster, MS, Stephanie Kozachek, BS, Surbhi Kanotra, BS, Sarah Elsea, PhD, and Marilyn Stern, PhD

Departments: Psychology, Pediatrics, and Human Genetics

Background: Smith-Magenis syndrome (SMS) is a chromosomal disorder affecting 1 out of 25,000 births. SMS is characterized by physical, developmental, and behavioral features including craniofacial anomalies, feeding problems, low muscle tone, mental retardation, speech delay, decreased pain sensitivity, sleep disturbances, hyperactivity, inattentiveness, mood instability, and self-injury. Caregivers must readily adapt to the specific and ever-changing needs of the child. Not only can this be challenging daily, it is a role that the caretaker often assumes for a lifetime. Due to these demands, caregivers may encounter difficulties maintaining their own level of well-being (WB). Despite concerns among healthcare professionals and families, this is the first study to investigate WB and related constructs among SMS caregivers.

Objectives: The first aim of this study was to explore whether caregiver demographics significantly relate to caregiver WB among mothers caring for a child diagnosed with SMS. The second aim was to examine whether social support (SS), caregiver efficacy (CE) and satisfaction (CS), and symptoms of depression and anxiety predict the quality of caregiver WB. The moderating effects of counseling history were also assessed.

Methods: Ninety-six mothers (Mage = 41.6 years, SDage = 9.25 years) of children diagnosed with SMS (Mage = 12.88 years, SDage = 9.08 years) completed an online survey containing several self-report questionnaires via a link posted on the PRISMS (Parents and Researchers Interested in Smith-Magenis Syndrome) website.

Results: Hierarchical regression analyses indicated that CS, CE, and SS together predicted the change in caregiver WB beyond the influence of counseling history and highest level of education completed by the mother. Furthermore, there was a main effect of CS on caregiver WB. Additional regressions suggested that while counseling history moderates the effects of anxiety symptoms on caregiver WB, there is no significant interaction between depression symptoms and counseling history in predicting caregiver WB. With the exception of level of education obtained and counseling history, demographic variables did not influence caregiver WB in this population.

Conclusions: Initial analyses indicate that while numerous factors may play roles in predicting caregiver WB among mothers caring for a child with SMS, formal counseling may play an especially important role in predicting outcomes and interacting to alleviate the anxieties some mothers feel.

30 Francis, Michael, Medical Graduate Student, Pathology; 804-519-8765;
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Poster Title: Breast Reconstruction Using Patient-Derived Adipose Stem Cells and Electrospun Fat Matrix

Authors: Michael P. Francis, Patrick C. Sachs, Yas M. Moghaddam, Gary L. Bowlin, Lynne W. Elmore, and Shawn E. Holt

Departments: Pathology, Human Genetics, and Biomedical Engineering

Background: Lumpectomies and mastectomies are common procedures for the nearly 300,000 U.S. women newly diagnosed with breast cancer each year, with three-fourths choosing surgical reconstruction following mastectomy. For reconstruction, women have two main options, both of which can impose problems: artificial implants that typically lack tactile and topological features of normal breasts; and transverse abdominis myocutaneous (TRAM Flap) transplantation of tummy skin, fat and muscle into the resected breast that can cause donor and implant site morbidity, among other complications. At that, a need for new, natural replacement breast tissue has emerged.

Objectives: Here, we propose to test the efficacy of syngeneic adipose-derived stem cells (ASCs) with biomimetic scaffolds of electrospun fat extracellular matrix (ECM) and fibrinogen as a novel approach for breast reconstruction.

Methods: We have recently found that purified patient-derived adipose ECM from lipoaspirate, a matrix composed of laminin, fibronectin, and collagens I, III, IV, V and VI and highly analogous to the basement membrane ECM of normal breast tissue, will electrospin to create a nanofibrous scaffold composed of biologic nanofibers in the 10-100nm range. Adipose ECM also electrospins and copolymerizes when blended with poly-dioxanone (PDO), an absorbable suture material that imparts enhanced mechanical properties to the construct.

Results: To our knowledge, this is the first report of a human fat-derived matrix recreated ex vivo by electrospinning, which is potentially valuable for mammary models systems development and for engineering new biomimetic, syngeneic and non-immunoreactive tissues for transplantation. In addition, ASCs cultured for 1 to 6 weeks in static and in bioreactor cultures have proven highly adaptive to electrospun fibrinogen scaffolds (another promising patient-derivable matrix) actively migrating through their environment, suggesting extensive cell-matrix and cell-cell communications. ASCs remodel spun fibrinogen, rapidly producing de novo collagen as the cells engraft, and are further capable of differentiating into new adipocytes.

Conclusions: Our data suggests that an ideal reconstructive support material of a fatty tissue made entirely of patient origin, using syngeneic fat stem cells and electrospun native ECM, can potentially be developed for use following reconstructive surgery, and further for mammary model systems development.

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Poster Title: The Regulation of Expression and Function of FSH Receptor through Smad3 in Mouse Granulosa Cells

Authors: Xiaoyan Gong, and Elizabeth A. McGee

Departments: Obstetrics and Gynecology

Background: FSH regulates normal ovarian follicle development and spermatogenesis through FSH receptor (FSHR). Regulation of FSHR expression and connection with specific signal transduction pathways are the key in the regulation of folliculogenesis. Smad3 is an important mediator of the TGF β signaling pathway. In the previous studies, Smad3-deficient (KO) mice had an aberrant of follicular growth and generally fail to produce preovulatory follicles.

Objectives: In this study, we evaluated the effect of Smad3 in the regulation of FSHR expression and function in mouse granulosa cells (GCs).

Methods: In order to determine if Smad3 function to FSH signaling pathway, Smad3-deficient (KO) and wild-type (WT) mice were used. The total RNAs from mouse ovaries or cultured granulosa cells were analyzed through real-time PCR quantitative analysis by the comparative Ct method and using TATA as a housekeeping gene.

Results: FSHR mRNA level in KO mice was decreased, only was 0.3 fold of WT expression level in whole ovary. Similar situation was existed in repose to FSH stimulation in cultured GCs. FSH stimulus induced FSHR expression to 1.6 fold of WT control level in WT GCs. In contrast, FSHR expression could not been significantly induced by FSH stimulus in KO GCs, it was only 0.5 fold relative to WT control. The determination of FSHR function was measured by aromatase gene expression. Real-time PCR revealed that KO GCs had reduced FSHR function on aromatase mRNA levels (0.6 fold) compared to WT control. The effect of restoration of Smad3 in KO GCs was studied using recombinant adenovirus AdSmad3. Real-time PCR revealed that in KO GCs infected with recombinant adenovirus AdSmad3, FSH (1IU/ml) stimulation induced FSHR expression by 1.4 fold relative to WT control. Aromatase also had increased expression by FSH stimulation both in KO cells restored Smad3 and WT cells (1.4 and 2.3 fold, respectively) relative to WT control.

Conclusions: Smad3-deficiency potentially reduced the ability of granulosa cells to produce estrogen with appropriated FSH stimulus. Smad3 is necessary for optimization of the abilities of granulosa cells to increase FSHR and aromatase expression in response to FSH stimulation. As a signal transduction molecule, Smad3 plays an important role in maintaining the expression and function of FSH-induced FSH receptor expression. Smad3 may be a key factor in maintaining normal folliculogenesis.

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Poster Title: Development and Pilot Testing of a Parent Intervention to Reduce Pediatric Overweight

Authors: S.E. Mazzeo, R.W. Gow, S.E. Trace, K. Serdar, N. Heiman, J. Jonda

Departments: Psychology and Pediatrics

Background: The prevalence of pediatric overweight has steadily increased for the past thirty years and is associated with numerous physical and psychological health problems. Thus, there is considerable need for early intervention. Some researchers have recommended targeting parents exclusively in pediatric overweight interventions, as this reduces decrements in child self-esteem, and decreases child resistance and disordered eating behaviors. Further, targeting parents can help the entire family improve their health behaviors. Yet, few studies have evaluated interventions exclusively targeting parents.

Objectives: Two pilot studies were conducted to assess the efficacy of a parent intervention to prevent pediatric overweight.

Methods: Study 1 involved 1) focus groups to identify specific parent concerns, 2) development of an eight session intervention, and 3) evaluation using a pretest-posttest wait-list control group design. Session topics included nutrition, exercise, the feeding relationship, family meals, mindful eating, media, and body image.

Results: Post-test results were increased physical activity among parents, reductions in parental pressure for children to eat more food, and higher dietary restraint in parents' diets. Further, intervention parents increased fiber intake more than control group parents. These changes persisted at six-month follow-up. Study 1 findings informed Study 2 development. Study 2 distinctions included recruitment of parents with a child ages 6-11 who was at or above the 85th percentile for BMI. Also, the intervention sessions were expanded from 8 to 12 sessions and anthropometric measures were included for parents and children. Post-test results include increased fiber intake, greater family cohesion, lower family conflict, increased dietary monitoring, and lower dietary restriction.

Conclusions: These pilot studies demonstrate the feasibility of parent interventions and will inform future interventions addressing pediatric overweight.

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Poster Title: Differences in Nicotine Dependence Scores in a Treatment-Based Sample of Pregnant Drug Dependent Women with and without Co-Morbid Prenatal Alcohol Use

Authors: J.N. Gray, D.S. Svikis, and N. Haug

Departments: Psychology

Background: The majority of pregnant illicit drug dependent women also use or abuse legal substances such as alcohol and tobacco. Both of these substances are associated with a variety of adverse maternal and infant outcomes (e.g., low birth weight, mental retardation, prematurity), yet they are often overlooked by treatment providers who focus instead on the cocaine and/or opiate dependence.

Objectives: The present study examined smoking characteristics and severity of nicotine dependence in a sample of cocaine and opiate dependent pregnant women with and without co-morbid alcohol problems.

Methods: Participants were 109 pregnant drug dependent women admitted to residential treatment. All provided consent as part of a larger behavioral research study and completed the Addiction Severity Index (ASI) and Fagerström Test for Nicotine Dependence (FTND) as part of baseline assessment. Participants had an average age of 29.1 years (SD = 4.4 years) and 87% were African American. Women were categorized as alcohol positive (Alc+) if they reported any alcohol use in past 30 days and alcohol negative (Alc-) if no recent (past 30 days) drinking was reported.

Results: Nearly all women reported recent tobacco use (97% reported daily use past 30 days). While Alc+ and Alc- women reported smoking similar numbers of cigarettes per day (Mean = 17 cigs/day, SEM 1.0), a positive correlation was found between number of drinks consumed per day and number of cigarettes smoked per day in the month prior to treatment enrollment ($r=0.4$). Interestingly, however, Alc- women obtained higher mean FTND scores than Alc+ women [4.5 (SEM 0.2) and 3.5 (SEM 0.4), respectively; $p<.05$].

Conclusions: Study findings confirm high rates of co-morbid alcohol and tobacco use in pregnant drug dependent women. Results also suggest alcohol and tobacco use are related to one another and that treatment providers should address use of both substances during treatment planning as prenatal alcohol and tobacco consumption are associated with negative maternal and infant outcomes.

Disclaimer: This research was supported by an R01 grant from NIAAA and a Center grant from NIDA.

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Poster Title: Serum Protein Binding of Lopinavir in Cord Blood

Authors: Abhishek Gulati, F. Douglas Boudinot, and Phillip M. Gerk

Departments: Pharmaceutics and Graduate School

Background: HIV Protease inhibitors are a very important part of Highly Active Anti-Retroviral Therapy (HAART) used to treat HIV infected patients. When pregnant women are treated for HIV infection, the aim of the therapy is not only the treatment of the maternal infection but also to reduce mother-to-child transmission of the virus. HIV Protease inhibitors have a very low mother-to-fetal placental transfer compared to other antiretrovirals. These drugs are relatively large (MW > 500), are highly plasma protein bound, predominantly to α -1 acid glycoprotein, and are substrates of certain ATP-Binding Cassette (ABC) transporters present on the maternal side of the placenta.

Objectives: The hypothesis is that mother-to-fetal transfer of HIV protease inhibitors can be increased by using agents that either inhibit ABC transporters or inhibit the drugs' maternal plasma protein binding or both. The primary objective of the project is to increase the transfer of HIV protease inhibitors to the fetus, in order to lower the vertical HIV transmission in pregnant HIV positive women.

Methods: Rapid Equilibrium Dialysis was used to determine protein binding of lopinavir in serum obtained from cord blood. Cord blood was taken from placentas obtained immediately after cesarean section of healthy non-HIV infected women (n=3). ³H-Lopinavir was added and dialysis carried out to equilibrium. ³H-lopinavir in serum and buffer was detected by Liquid Scintillation Counting.

Results: Equilibrium was achieved within 16 hours of dialysis. Fraction unbound for lopinavir in cord blood obtained from placentas of non-HIV infected patients was found to be 2.35 % \pm 1.3 %.

Conclusions: Our results are similar to unpublished results of Else et al regarding the extent of protein binding of lopinavir in plasma from cord blood of HIV infected pregnancies. Future studies will determine how enhancers like ritonavir could be better used to improve maternal-to-fetal transfer of lopinavir by altering protein binding and/or inhibiting ABC transporters, thus decreasing the risk of vertical HIV transmission.

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Poster Title: Understanding Teen Pregnancy and School Dropout among Latino Adolescents: The Content of their Possible Selves

Authors: Raquel Halfond, Rosalie Corona, Christy Buchanan, and Anya Moon

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Background: Latino youth engage in behaviors that increase their risk of unintended pregnancy and decreased career attainment. In fact, Latino adolescents have one of the highest rates of teenage pregnancy among youth and the highest rate of high school dropout. What an adolescent hopes to become or fears becoming in the future may motivate him/her to refrain from engaging in risky behavior. However, very little research exists on the hoped-for or feared possible selves of Latino youth. Understanding Latino youths' possible selves may help in prevention programming.

Objectives: The purpose of this study was to identify Latino adolescents' hopes and fears for future outcomes or "possible selves."

Methods: 73 Latino youth (10 – 17 years; 54.8% female) living in North Carolina and Virginia participated. Data were collected via questionnaire (NC) and individual semi-structured interview (VA). Youth answered questions about what they might be like in the future and their ideas of what they hoped to avoid being like in the future. Data were analyzed using qualitative procedures. Themes were identified and defined based upon the actual transcripts as well as the literature and then instances of each theme were identified in the transcripts.

Results: Eight main themes for hoped-for and feared selves were found. Youth hoped-for achievement, relational, financial, interpersonal, positive personal characteristics, good health outcomes, and desired to give back to the Latino community. For example, youth described various careers and educational achievements and indicated a desire to become a parent later in life. Youth feared outcomes such as delinquent behavior and substance use.

Conclusions: Overall, results indicate that youth expressed hopes and fears for future outcomes that are not consistent with high rates of teen pregnancy and school dropout among Latino adolescents. However, it is important to note that their hopes and fears were not necessarily balanced. For example, youth expressed a hope to graduate from school but did not also fear becoming a school dropout. Youth also expressed a desire to have a family or become a good parent, but they did not fear becoming a teen parent. Targeting this lack of balance, as a predictor of engagement in risky behavior might be important in prevention programming focused on teen pregnancy and school dropout among Latino adolescents.

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Poster Title: Father Daughter Attachment and Sexual Behavior in African American Daughters

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Departments: School of Nursing

Background: Despite a decline in the number of adolescent pregnancies, 35% of African-American babies were delivered to mothers 10-19 years of age (National Vital Statistics Report, 2005). Additionally, the 2005 Youth Risk Behavior Survey reports less condom use, more sexual partners and an increased likelihood to experience a sexually transmitted infection by African Americans. The influence of a father on his daughter in adolescence has largely been understudied and rarely has been examined in African Americans. This study examines whether a positive paternal relationship is a protective factor against early sexual activity, sexually transmitted infections, pregnancy and low condom use.

Objectives: 1) The aim of the study is to describe the association between father-daughter attachment and female adolescent sexual behavior. The study will provide information to answer the following questions. What is the relationship between father-daughter attachment, age of sexual initiation and pregnancy in late adolescent African-Americans? 2) Is father-daughter sexual communication related to the occurrence of pregnancy, frequency of condom use and number of sexually transmitted infections? 3) Is there a relationship between father-daughter attachment and daughter self-esteem?

Methods: The research design is a one-time collection of quantitative data via online survey from 120 late adolescent African-American females (age 18-21 years). The survey is administered by Survey Monkey. Study participants must have had a father or father figure when they were between the ages of 12 to 17 and a history of dating men. Participants are being recruited from the student body of Virginia Commonwealth University. The tools used are the Parent Adolescent Questionnaire, The Rosenberg Self-Esteem Scale, The Parent-Teen Sexual Communication Survey, The Sexual Self Esteem Scale (Women) and demographic data including sexual history.

Results: Correlations will be used to examine the relationships between father-daughter attachment/communication and age of sexual initiation, condom use and pregnancy. Statistical significance of father-daughter attachment/communication will be examined and associated odds/ratio related to sexual initiation, condom use and pregnancy will be calculated.

Conclusions: Little is known about this phenomenon in African-Americans. Findings are important to healthcare providers and could significantly alter parenting education programs as well as pregnancy prevention initiatives

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Poster Title: Localization of Smad6 and Smad7 during Ovarian Folliculogenesis

Authors: Valerie Hoang, Xiaoyan Gong, and Elizabeth A. McGee

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Background: Smads are a group of signaling molecules that are part of the transforming growth factor β (TGF β) family of growth factors. Within the ovary, Smads regulate different ovarian cells during folliculogenesis. Smad6 and Smad7 inhibit TGF β and BMP signaling. While there are many studies on the receptor-activated Smads, there has been less investigation of the inhibitory Smads (Smad6 and Smad7) during folliculogenesis.

Objectives: The objective of these studies was to determine where the two inhibitory Smads were expressed and how they were regulated in ovarian tissues.

Methods: Paraffin embedded mice ovaries were sectioned and used for immunohistochemical staining. Cultured granulosa cells were used for cellular localization, Western blot, and real-time PCR analysis of Smad6 and Smad7 protein and mRNA.

Results: Smad6 was predominantly expressed in oocytes of medium sized preantral follicles, and Smad7 was localized to luteal cells. Cultured granulosa cells from immature mice express both Smad6 and Smad7. Western blot analysis of protein from granulosa cells treated with TGF β and FSH demonstrates time-dependent Smad6 and Smad7 expression in the cultured cells. mRNA expression for both Smad6 and Smad7 was also time-dependent. Cellular localization studies demonstrate different results for Smad6 and Smad7. Initially, Smad6 was localized in the cytoplasm of granulosa cells. After two hours incubation with TGF β , however, Smad6 had translocated to the nucleus. Smad7 was present only in some of the granulosa cells and did not translocate following TGF β treatment.

Conclusions: In this study we localized Smad6 and Smad7 in mice ovary sections and cultured mice granulosa cells for Smad6 and Smad7 protein and mRNA analysis as well as cellular localization. The differential expression patterns of Smad6 and Smad7 in the ovary may have important implications for their specific roles in folliculogenesis.

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Poster Title: Assessing Risk for Problematic Drinking and Depression in Post-Partum Women Using Tobacco Use as an Indicator

Authors: L. Islam, L. Keyser-Marcus, L. Meloy, S. Ondersma and D. Svikis

Departments: Clinical Psychology, Psychiatry, Pediatrics, Psychology, Virginia Commonwealth University, and Psychiatry, Wayne State University

Background: While significant efforts have been directed toward screening and intervention for alcohol and tobacco use during pregnancy, much less attention has focused on such use post-partum. New mothers are faced with a variety of stressors (e.g., lack of sleep, care of newborn), increasing their risk for alcohol problems and symptoms of depression. The pediatric clinic offers an ideal setting in which to screen post-partum women so that those experiencing problems can be referred for further evaluation or treatment. Since pediatric staff time and resources are often limited, it would be important to identify easy-to-administer questions that can identify the postpartum women at increased risk for alcohol problems and major depression.

Objectives: The present study examined the utility of current tobacco use as a screening tool for identifying postpartum women most at risk for alcohol and depressive disorders.

Methods: Study participants were 238 postpartum women whose children received pediatric care through the VCU Health System. Demographically, the women were primarily African-American (84.8%) with a mean age of 25.5 yrs (SD = 6.0). All provided informed consent to complete a brief Health Screening Survey (HSS) administered either by computer or as a face-to-face interview. The HSS included the CES-D items for depression as well as the five TWEAK screening questions for alcohol risk. Over one-third (38%) of the women classified themselves as current smokers (CS) (N=91), with N=147 classified as non-smokers (NS).

Results: The two groups were compared using chi-squares for categorical measures and t-tests for continuous data. CS women were more likely to obtain CES-D scores above the clinical cut-off for depression (16 and above) (40%) than NS women (26%) ($p < .05$). CS women were also almost twice as likely to score “at risk” for alcohol problems (35%) compared to NS women (19%) ($p < .01$).

Conclusions: Study findings support the utility of training pediatric staff to use a simple question such as “Do you currently smoke cigarettes?” as a time-efficient method for identifying new mothers at greatest risk for problem drinking and symptoms of postpartum depression.

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Poster Title: Adverse Influence of Female Gender on Outcomes after Coronary Bypass Surgery: a Propensity Matched Analysis

Authors: Vigneshwar Kasirajan, MD, Luke G. Wolfe, MS, and Angel E. Medina, RN

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Background: Female patients have been shown to have a different risk profile and increased adverse events after coronary bypass grafting (CAB).

Objectives: The objective was to create a risk profile based on gender and look at outcomes in propensity matched groups with similar factors differing by gender.

Methods: From May 2001 to December 2006, 976 patients underwent isolated CAB. Univariable analysis created a risk profile for female and male patients. Multivariable logistic regression was used to develop independent predictors of mortality. Propensity matching for the most predictive variables of adverse was used to create matched sets of 269 male and female patients to analyze outcomes independent of these variables.

Results: Of the 976 patients 309(31.7%) were female. Of the 19 preoperative risk factors analyzed, 7 (diabetes, hypertension, older age, higher body mass index(BMI),and African American race) were more predictive of female gender. Males had more smokers and acute myocardial infarction within 7 days before surgery. Independent predictors of mortality were female gender(P=0.0107), diabetes (P=0.0153), increased age (P=0.0158), acute MI < 7 days (P=0.0025). Propensity matching (for smoking, diabetes, hypertension, MI < 7days, age, BMI and race) still showed increased in-hospital complications 32.7% Female vs. 23.42% Male (p=0.0165),and mortality 5.58% Female vs. 1.86% Male (P=0.0227) for patients.

Conclusions: Female patients undergoing CAB have a different risk profile and have a higher incidence of adverse outcomes including death, which are not mitigated by careful matching with male patients. Prospective studies are needed to study for potential factors such as transfusion, red cell mass, glycemic control and conduit selection that could be modified to improve outcomes.

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Poster Title: What Makes a Woman?: Transgender Identities and Their Implications on Health Systems

Authors: Jeremy Kidd, BA and Tarynn Witten, PhD, MSW, FGSA

Departments: School of Medicine and School of Social Work

Background: Recently, the Virginia Department of Health recognized transgender-identified persons (trans-persons) as an underserved population. Numerous studies have demonstrated that trans-persons are at increased risk for hate violence and healthcare discrimination. “Women’s Health Clinics” often prove perplexing for trans-persons: they provide services necessary for transgender health maintenance but with an uncertain level of sensitivity to the complex identities of trans-persons. Do such clinics offer pap smears for trans-men (naturally-sexed women identifying as men and possibly using masculinizing hormones or surgery) or prostate care to trans-women (naturally-sexed men identifying as women)?

Objectives: We present research about the healthcare needs of trans-persons and the implications of transgender identities on health systems, including “women’s health” centers.

Methods: Two mixed-method, qualitative/quantitative, randomized with snowball sampling and direct mailing methods studies are presented: (1) a study of violence and spirituality among trans-men in Virginia and (2) the Transgender Longitudinal Aging Research Study (TLARS), a 15 year, ongoing international transgender aging study.

Results: Of TLARS respondents, 5.2% were placed in psychiatric hospitals (n=210), 15.7% were forced to see a counselor/therapist who tried to change them (n=210), and 2.4% (n=210) were forced to have surgery (intersex identification). Additionally, 91% reported a high degree of perceived and actual violence/abuse. Of the 86 respondents who answered the question on abuse before age 18, 60 respondents (69.76%) suffered some sort of violence or abuse. In the Virginia study, 69.23% of respondents (n=13) reported some form of social mistreatment (at least 439 separate incidents) and none reported their victimization to law enforcement.

Conclusions: These results demonstrate the stigmatized nature of trans-identities and the prevalence of anti-transgender healthcare discrimination. Ironically, many of the needed services fall within the purview of women’s healthcare (e.g., Pap smears, mammography, sexual assault services, hypertension management, hormone therapy). However, most practitioners have not regularly interacted with trans-patients and, consequently, lack the sensitivity necessary to gain trans-patients’ trust. Attaining this cultural awareness requires certain ideological adjustments on the part of physicians to provide anatomically appropriate care while respecting the trans-person’s autonomous gender identity.

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Poster Title: An Analysis by Age and Gender of Efficacy Data from Placebo-Controlled Desvenlafaxine Succinate Clinical Trials in Depressed Outpatients

Authors: Susan G. Kornstein, MD, Anita H. Clayton, MD, Claudio N. Soares, MD, PhD, Michael E. Thase, MD, Claudine Brisard, MD, Bruno Pitrosky, PhD, Qin Jiang, MS, and Saeeduddin Ahmed, MD

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Background: The efficacy of desvenlafaxine succinate (desvenlafaxine) versus placebo for the treatment of major depressive disorder (MDD) in male and female outpatients of different age groups was assessed.

Methods: Data from 7 double-blind, placebo-controlled desvenlafaxine clinical trials were pooled for this analysis. The age groups 18-39 and >55 years of age were chosen as proxies for premenopausal and postmenopausal status. An intermediate age group, 40 to 55 years, which was likely to include perimenopausal females, was also used. The similarly grouped male patients were used to differentiate the effects of menopausal status on desvenlafaxine treatment response from those related to age. The change from baseline on the 17-item Hamilton Rating Scale for Depression (HAM-D17) was the primary outcome for this analysis, while the Clinical Global Impressions–Improvement (CGI-I) scores and rates of HAM-D17 response (>50% reduction in HAM-D17 scores) and remission (HAM-D17 score <7) were secondary measures of efficacy.

Results: Patients (N=1186) received desvenlafaxine at doses of 100 to 400 mg per day (males: 18-39 years [n=205]; 40-55 years [n=220]; >55 [n=63]; females: 18-39 years [n=305]; 40-55 years [n=302]; >55 [n=91]), while 797 patients received a placebo (males: 18-39 years [n=116]; 40-55 years [n=134]; >55 [n=42]; females: 18-39 years [n=220]; 40-55 years [n=211]; >55 [n=74]). In the total population, the desvenlafaxine group saw a significantly greater final change from baseline scores on the HAM-D17 compared with the placebo group (P<0.001). Additionally, final CGI-I scores and HAM-D17 response and remission rates were significantly greater for those receiving desvenlafaxine than placebo (P<0.001). No significant age effect was observed in either sex. No significant gender by treatment interaction was observed. The mean differences in desvenlafaxine from placebo scores on the HAM-D17 (adjusted ANCOVA) for males were: 18-39: -1.1, 40-55: -2.7, >55: -0.5 and for females were: 18-39: -1.2, 40-55: -1.5, and >55: -3.6. For the CGI-I, these differences were: males 18-39: -0.1, 40-55: -0.4, >55: -0.2 and females 18-39: -0.3, 40-55: -0.2, and >55: -0.6.

Conclusions: DVS demonstrated consistent efficacy in adults across the age and gender groups studied.

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Poster Title: Using an Integrated Women's Health Model to Advance Women's Leadership in Academic Medicine

Authors: Susan G. Kornstein, MD, Wendy S. Klein, MD, Janett A. Forte, MSW, Dace S. Svikis, PhD, Saba W. Masho, MD, DrPH, and Carol L. Hampton, MMS

Departments: Psychiatry, Institute for Women's Health, Psychology, Epidemiology and Community Health, and School of Medicine

Background: The purpose of our project is to illustrate and report the many opportunities for leadership developed through our Virginia Commonwealth University Institute for Women's Health (VCU IWH) by highlighting the numerous and diverse leadership roles that women affiliated with the Institute have attained in the University and beyond.

Methods: Data were collected, tabulated, tracked, and reported for women affiliated with IWH and the leadership positions that they have attained within the Institute, in the University, in the greater community, nationally and internationally.

Results: Over the past eight years since the Institute for Women's Health was established, women affiliated with the Institute have attained more than 75 different leadership positions across a broad spectrum of university, community, state, national and international venues. These positions have resulted in accomplishments and influence in a variety of spheres, as well as awards and recognition for both the individual women and the University as a whole.

Conclusions: The Institute for Women's Health, National Center of Excellence is a model and showcase for cultivating and promoting strong women leaders who have opportunities to influence services, policies, and practice within the academic medical center, the larger community, and beyond.

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Poster Title: Establishing an Electrospun Biomimetic Scaffolding for Studying Breast Cancer Biology

Authors: Peter Ma, Michael Francis, Yas Moghaddam, Scott Henderson, M. Jeannette Aiken, Shawn Holt, Gary Bowlin, and Lynne Elmore

Departments: Massey Cancer Center, Pathology, Biomedical Engineering, Anatomy and Neurobiology, and Human Genetics

Background: Recognizing the importance of cell-cell and cell-extracellular matrix (ECM) interactions in the development of cancer, we have begun using electrospun biomimetic matrix analogues to create in vitro culture conditions that more closely mimic the in vivo situation. Creating these ECM analogues (“test matrix”) by electrospinning allows for scaffolding fabrication with control over the fiber diameter and mechanical properties to which cells, epithelial and stromal, can be seeded or electrospray deposited during 3-D scaffold development.

Objectives: To establish an electrospun biomimetic scaffolding for studying breast cancer biology

Methods: MCF-10A human mammary epithelial cells were chosen due to their ability to form ductular structures when embedded within more conventional matrices such as Matrigel or type 1 collagen. MCF-10A cells were seeded on top of a 1:1 fibrinogen/polydioxanone blend or co-electrospun with this test matrix. A time course study was conducted comparing the viability and cellularity in static culture versus a batch rotary cell culture system (bioreactor). Routine histology, as well as scanning electron, confocal, and multi-photon microscopy were employed to assess MCF-10A viability, matrix penetration, and morphogenic properties.

Results: MCF-10A cells statically seeded onto electrospun fibrinogen (200-500 microns thick) remained viable; however, after 1-week cellular infiltration into the matrix was very low even when pore size and fiber diameter was increased. For enhancing construct cellularity and ductular morphogenesis, MCF-10A cells were electrosprayed into fibrinogen/PDO scaffolds. Confocal and multi-photon microscopy indicated that cells within the constructs under rotary cell culture were greater in number and deeper within the fiber network compared to static cultures. Our preliminary data suggest that as early as 3 days after electrospray deposition, mammary epithelial cells form ductular-like structures within the randomly dispersed nanofibers.

Conclusions: Electro spraying MCF-710A cells into a fibrinogen:PDO test matrix promotes the viability and functionality of mammary epithelial cells. We conclude it is a superior approach to directly seeding mammary cells on top of electrospun matrices. Studies are ongoing to optimize our co-electrospinning approach as well as to begin to systematically introduce mammary stromal and stem cells in order to establish an organotypic culture system for elucidating mechanisms of mammary carcinogenesis.

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Poster Title: Gender Differences in Stress, Forgiveness, and Mental Health in Recently Married Couples

Authors: Andrea J. Miller, Everett L. Worthington, Jr., and Aubrey L. Gartner

Departments: Psychology

Background: In a recent meta-analysis on gender and forgiveness, females were found to be slightly more forgiving than males ($d = .28$). In addition, emotional unforgiveness is a type of stressor that can increase the overall stress and can contribute to mental health problems. Furthermore, research has shown that marital stressfulness (as measured by salivary cortisol), has been associated with lack of marital forgiveness and flattened diurnal cortisol slope has been associated with marital dissatisfaction. Stress has also been frequently linked to mental illness symptoms.

Objectives: To examine gender differences in forgiveness, stress, and mental health in recently married couples.

Methods: Participants, recently 311 married couples, completed demographic, trait, marriage-specific, and event-specific measures. Participants then rested for at least 30 minutes and, as individuals, were taken to a room. They were told to relax (for about five minutes). They chewed a chemically treated cotton-swab Salivette® for 30 seconds. They then were instructed to imagine a typical conversation representing their relationship with their spouse. After four and a half minutes of imagery, they chewed a second Salivette® for 30 seconds.

Results: Men reported more forgiveness of marital transgressions, success at communicating forgiveness to their partner, and empathy after a transgression. Females reported more marital commitment and more symptoms of anxiety, depression, hostility, and stress. There were no significant gender differences in cortisol data, but there was a weak trend indicating females had higher cortisol than did males. Interpersonal sensitivity, marital satisfaction, perceived severity of marital transgressions, and success at communicating forgiveness predicted overall marital forgiveness.

Conclusion: Gender plays a role in the way that newly married couples may maintain their emotional connections after experiencing a transgression. Sensitivity, success in communicating forgiveness, and mental health symptoms were found to be gender-related. Although women reported more stress, there was only a weak trend in cortisol data. However, because gender differences can increase under stress and because, as expected, couples reported little stress so early in marriage, it is important to study couples across time.

46 Phipps, Lisa, Post-doctoral Fellow, Pharmacology/Toxicology; 804-678-8022; burroughslr@vcu.edu

Poster Title: Use of Dietary Supplements by Female Regular and Non-Regular Users of Tobacco, Alcohol, and Caffeine

Authors: L.B. Phipps, N. Karjane, L. Anderson, D. Stovall, D. Miles, and D.S. Svikis

Departments: Pharmacology/Toxicology, Obstetrics and Gynecology, and Psychology

Background: Tobacco, alcohol, and caffeine are commonly consumed substances in today's society. The use of complementary and alternative medicines (CAM) such as herbal supplements has gained in popularity, and it has become increasingly important for health care providers to be aware of their patients' use of these products.

Objectives: The present study compared CAM use in women who were regular or non-regular users of tobacco, alcohol, and caffeine.

Methods: Women were recruited from 3 health clinics within the VCU Health System including a suburban practice, an urban GYN clinic and a university student health service. A total of 294 women provided informed consent and completed the survey while waiting to see their health providers. The survey asked about lifetime (ever), recent (past 30 days) and regular use of 36 specific dietary supplements including twelve vitamins and minerals, as well as alcohol, tobacco and caffeine use.

Results: Overall, 83% of the women reported having tried at least one CAM and 62% reported having tried a CAM excluding vitamins or minerals (EVM). Values for regular CAM use were 64% overall and 34% (CAM-EVM). When use of CAMs was compared in women who were regular and non-regular users of other substances, no differences for tobacco users were found. However, regular users of alcohol were more likely to report any CAM use than non-regular alcohol users (73% and 58%, respectively, $p=.025$). A similar pattern was found for regular CAM use, with more regular alcohol users reporting regular CAM use than non-regular alcohol users (79% and 58%, $p=.001$). Similar patterns were found for caffeine, with women who regularly use caffeine twice as likely to report any CAM use than women who do not use caffeine regularly (67% and 33%, $p=.001$). The same pattern was found for ever using CAM-EVM when regular and non-regular caffeine users were compared (68% and 32%, $p=.010$). Rates of regular CAM and CAM-EVM use were similarly higher in regular caffeine users as compared to non-regular caffeine users (both $p<.001$).

Conclusions: Study findings suggest that women who regularly use alcohol and/or caffeine are also more likely to experiment with CAM use and progress to regular CAM use as well.

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Poster Title: Expanding the Learning in Women's Health for Fourth Year Medical Students

Authors: C. Picco, T. Beck, and J.G. Pierce

Departments: Obstetrics and Gynecology

Background: The fourth year of medical school is typically a year where medical students rotate on inpatient or outpatient services for one-month rotations. Most medical students have only a partial understanding of a specialty practice and enter residency with a limited experience of continuity in practice.

Objectives: Two fourth-year medical students were chosen to be a part of a nine-month, longitudinal elective sponsored by VCU's Department of Ob/Gyn. The aim was to provide medical students with a complete picture of obstetrical care.

Methods: A nine-month, longitudinal obstetric acting internship was created as a pilot project. An attending physician supervised the students' clinic while working with other Ob/Gyn residents. Students were required to spend one-half day per week in their obstetric clinic from August through April of their fourth year. The estimated time to be spent in the clinic was ~146 hours. Additional work hours were incorporated as students provided inpatient care for their patients.

Results: The students involved in this pilot project described the experience as excellent. Students performed the initial work-up on multiple low-risk obstetric patients and followed the patients for prenatal visits. Patient volume for the students' clinic was limited initially but was increased as the students' speed and efficiency improved. Learning was felt to be significant as the students had direct responsibility and they developed relationships with patients. Attendings guided the students as if they were new interns. Students learned first hand about prenatal care, problems in pregnancy, communication with patients, and postpartum evaluations.

Conclusions: This pilot project was considered by the students to be one of the most beneficial and educational activities they had experienced in medical school. The project will be continued due to the positive response. Problems encountered during this project included adequate attending coverage, varying approaches to care by different attendings, and notification of students when patients were admitted. Future changes for this project include adding a specific curriculum, assigning dedicated attendings to the clinic, and improving communication within the department. We hope that this model of education will be extended to other fields of medicine for medical students to receive valuable, real-world experience before residency.

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Poster Title: "Exploring the Trajectory of Cardiometabolic Risk in Women"

Authors: Jo Robins, PhD, RN, ANP and Nancy McCain, DNS, RN, FAAN

Departments: Nursing

Background: Coronary heart disease (CHD) is the leading cause of death in women in the U.S. Historically, CHD has been underdiagnosed and inadequately treated in women related to gender bias, lack of public and medical awareness of its prevalence, and its unique presenting symptomatology (Bedinghaus, 2001; Legato, 1997). Despite increasing awareness, better diagnostics and treatment, women are still more likely to present with advanced disease and experience higher morbidity and mortality. Adding to this complexity is the fact that atherosclerosis only partly explains CHD in women, with at least half of women with CHD presenting with no coronary obstruction (Merz, 2001). Despite the absence of angiographic obstruction, these women experience ongoing symptom-related disability and consume significant healthcare resources. Weight gain, particularly abdominal adiposity is becoming epidemic in women and is predictive of evolving CMR arising from stress related neuroendocrine and immune imbalances including the development of insulin resistance, metabolic syndrome, and type 2 diabetes. Additionally, psychosocial variables such as stress, depression, and lack of social support significantly contribute to the manifestation of CHD. Given these facts, prevention of CHD is paramount and may best be achieved by early identification and management of evolving biochemical changes instead of waiting until significant risk factors exist.

Objectives: In a sample of 40 premenopausal women with and without abdominal adiposity who have a family history of CHD, the objectives of this study are to: 1. Quantify baseline functional PNI and cardiovascular indicators of CMR, 2. Assess the relationships between the indicators of functional PNI and cardiovascular indicators of CMR, and 3. Develop a preliminary measurement model for identifying, predicting, and modifying CHD risk.

Methods: The design is cross-sectional and correlational. Fasting and 2hour PP labs and a battery of psychosocial measures are being done in 40 premenopausal women.

Results: This pilot study is in process. A subset of data for at least 32 of 40 participants will include demographics and select psychosocial and biological CMR indicators. The purpose of this submission is to present a new and innovative model of early detection of CMR in women.

Conclusions: The model to be presented is grounded in a sound theoretical and evidence-based framework. Preliminary data will provide initial insights into the strength of the proposed indicators in assessing and modifying CMR.

49 Salloum, Fadi, Postdoctoral Associate, Internal Medicine and Cardiology; 804-827-2340; fnsalloum@vcu.edu

Poster Title: Phosphodiesterase-5 Inhibitors Reduce Myocardial Infarction, Apoptosis and Improve Post-Ischemic Ventricular Function in Female Mice

Authors: Fadi N. Salloum, Antonio Abbate, William R. Brown, Nicholas N. Hoke and Rakesh C. Kukreja

Departments: Internal Medicine and Cardiology

Background: Phosphodiesterase-5 (PDE-5) inhibitors sildenafil (SIL) and vardenafil (VAR) induce powerful cardioprotection against ischemia/reperfusion injury (I/R) in male animal models.

Objectives: Since the impact of PDE-5 inhibitors on the female cardiovascular system following ischemia remains unknown, and considering the high incidence of mortality due to cardiovascular disease in women, we interrogated the effect of SIL and VAR on I/R in female mice.

Methods: Adult female mice were pretreated (ip, bid) with SIL (0.71 mg/kg), VAR (0.14 mg/kg) or saline one hr before left coronary artery ligation for 30 min and R for 24 hr. At the end of R, infarct size (IS) was measured using TTC staining and apoptosis was measured using TUNEL. Left ventricular (LV) function was evaluated using echocardiography.

Results: Myocardial IS (mean \pm SE) was reduced with SIL ($9.1 \pm 1.0\%$) and VAR ($8.8 \pm 1.1\%$) as compared to saline ($39.9 \pm 4.5\%$, $P < 0.05$). The apoptotic index was $9.0 \pm 3.3\%$ for saline, $1.9 \pm 0.9\%$ and $2.4 \pm 0.9\%$ for SIL and VAR, respectively. LV end-diastolic and end-systolic diameters increased 7 days post MI with saline from baseline values of 3.1 ± 0.1 mm and 1.6 ± 0.1 mm to 3.5 ± 0.1 mm and 2.4 ± 0.2 mm, respectively ($P < 0.05$ vs. control). In contrast, no dilatation was detected in SIL (3.0 ± 0.1 mm and 1.4 ± 0.1 mm, respectively) and VAR groups (2.9 ± 0.3 mm and 1.4 ± 0.2 mm, respectively). Fractional shortening (FS) decreased 7 days post MI with saline from a baseline value of $46.7 \pm 1.4\%$ to $30.4 \pm 4.1\%$ ($P < 0.05$), but was preserved with SIL ($52.2 \pm 2.0\%$) and VAR ($52.7 \pm 5.1\%$). Survival rate was lower with saline (57%) as compared to SIL (95%) and VAR (100%).

Conclusions: PDE-5 inhibitors induce powerful cardioprotection in female mice. We propose that PDE-5 inhibition may be a novel therapeutic strategy against I/R in women with coronary artery disease.

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Poster Title: Formation and Elimination of 2-Methoxyestradiol in the Human Placenta

Authors: Lindsay N. Samuel, Joseph K. Ritter, and Phillip M. Gerk

Departments: Pharmaceutics, Pharmacology and Toxicology

Background: Preeclampsia is a pregnancy related hypertensive disorder with a higher incidence in African American women. This condition can affect the mother and the developing fetus. If left untreated, preeclampsia can progress into eclampsia which can be fatal to the mother. Placentas from women with preeclampsia have lower catechol-o-methyl transferase (COMT) activity. The formation of 2-Methoxyestradiol (2ME) from 2-Hydroxyestradiol (2-OHE2) occurs via the COMT enzyme. 2ME regulates angiogenesis, the development of blood vessels. Elimination of 2ME from the placenta would also influence the activity of 2ME. The placenta expresses glucuronosyltransferases (such as UGT 2B7) and sulfotransferases which may be involved in the metabolism of 2ME and/or 2-OHE2. The placenta also expresses ATP binding cassette (ABC) transporters which can excrete these metabolites. Objectives: The purpose of this study is to elucidate the human placenta's role in the formation and elimination of 2ME.

Methods: Human term placenta villous tissue was cultured and incubated in the presence or absence of 2OHE2 or 2ME. Also, recombinant human UGT 2B7 microsomes were incubated as follows. An incubation mixture of (100 μ L of total volume) contained 250 mM Tris-HCl (pH 7.81), 40 mM MgCl₂, 10 mM alamethicin, 5 mM saccharolactone, 25 mM UDPGA, 15 μ g of UGT 2B7 expressed microsomes, 100 mM 2-Methoxyestradiol. The control incubation mixture without UDPGA and experimental mixture were incubated in a dry heat block at 37 °C for 17 hours. The reaction was stopped with 100% final volume of cold methanol. Samples were analyzed by reversed-phase HPLC with detection by UV (279 nm) and fluorescence (excitation 275 nm/emission 315 nm).

Results: We observed the formation of 2ME in placenta villous tissue as previously established. We also observed the formation of hydrophilic metabolites in the tissue and their excretion into the medium. Finally, we detected glucuronidation of 2ME by UGT 2B7.

Conclusions: The formation of hydrophilic metabolites is consistent with the placental expression and activity of glucuronosyltransferases and sulfotransferases. Their excretion into the medium is consistent with the ABC transporters. 2ME can be glucuronidated by UGT 2B7, which is expressed in the placental tissue. These proteins along with COMT may regulate placental exposure to 2ME.

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Poster Title: Infant Mortality Prevention Campaign Planning: Integrating Data from Multiple Sources

Authors: A.L. Sepulveda, M.G. Kennedy, J.B. Bradford, S. Garland, S.W. Masho, W.R. Smith, and Promoting Healthy Pregnancies Coalition

Departments: L. Douglas Wilder School of Government and Public Affairs, Social and Behavioral Health, Epidemiology and Community Health, Community Outreach, and Internal Medicine

Background: In Richmond, Virginia, there were from 2-4 times as many infant deaths among African-Americans as among whites between 2000-2004. A prevention communication campaign is a part of a large research center initiative to address this disparity. Campaign staff helped form a coalition of researchers and local service providers to coordinate efforts. Campaign evaluators collected several types of IRB-exempt formative data to identify a focal maternal behavior change for the campaign.

Objective: To narrow a list of potential health messages for delivery to African American women at high risk of premature birth and infant mortality in the city of Richmond. The specific research question was which behavior change would be both feasible for women to adopt and likely to reduce the burden of infant mortality in Richmond.

Methods: Triangulating multi-method, multi-source data is a recommended program planning approach for formative research in social marketing interventions. All 5 principal investigators who are directing other components of the large-scale research center initiative and the 23 members of the Promoting Healthy Pregnancies Coalition were mailed key informant ranking forms; additional hard copies were hand-delivered or emailed in some cases to improve response rates (response rates 100% and 43% respectively). Respondents ranked 7 potential campaign foci for mortality burden, behavior change feasibility, and overlap with existing local efforts. Two scientific literature reviews were conducted, and local research colleagues shared preliminary frequency analyses of linked birth-death certificate data from 2001-2005 in Richmond.

Results: The highest rated maternal behavior change by both scientists and community providers was smoking cessation. Published literature confirmed that smoking accounted for more variance in infant mortality than other maternal behaviors and identified determinants of smoking among high-risk African-American women and model anti-smoking programs. The anti-smoking focus was validated by birth-death certificate data that listed lifestyle factors as causes of the largest segment of deaths.

Conclusions: There was marked agreement across data sources, increasing the confidence of campaign partners in early planning decisions. Narrowing the focus to smoking made it possible to identify directions and resources for further research and the campaign. Coalition members learned about formative research and viewed this as a benefit of coalition participation. Readily gathered formative research can catalyze networking among researchers and service providers.

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Poster Title: Elevated Glutamate Levels May Play a Role in the Immunopathology of Systemic Lupus Erthyematosus

Authors: Jamie L. Sturgill and Daniel H. Conrad

Departments: Microbiology and Immunology

Background: Systemic lupus erthyematosus (SLE) is an autoimmune illness characterized by autoantibody production against self leading to widespread inflammation and tissue destruction. In the U.S. alone, it is estimated that approximately 1.5 million Americans have the disease with 90% of these patients being female. SLE is a complex disease in that there is not a single cause leading to disease manifest. Furthermore, there is currently no cure, only treatment options to alleviate the symptoms. The one hallmark of SLE is an accumulation of auto-reactive B cells which are hyperproliferative and produce immunoglobulin of various isotypes. Another interesting aspect of SLE is elevated glutamate levels both in the CNS and the periphery.

Objective: The purpose of this particular study is to further examine the link between elevated glutamate levels and human B cell activity as a novel aspect of SLE immunopathology.

Methods: B cells were isolated from human tonsils in accordance to the VCU IRB. Expression of glutamate receptors was detected via reverse transcriptase PCR, Western blot, and flow cytometry. Cellular proliferation was determined via H³ thymidine incorporation assay and all immunoglobulin levels were detected via ELISA.

Results: We report the presence of functional ionotropic glutamate receptors of the kainate subtype on human B cell cells. Upon stimulation, B cells exhibit significantly elevated cellular proliferation. Furthermore, we observe a significantly increased production in immunoglobulin levels.

Conclusions: To our knowledge, this is the first report of kainate receptors outside the human CNS, let alone on cells of the human immune system. This study suggests that the elevated glutamate seen in patients with SLE may be a contributing factor to the accumulation of auto-reactive B cells as well as the production of auto-antibody and thus may serve as a novel means of therapeutic intervention.

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Poster Title: Prenatal Risks for Substance Use in an Urban Clinic Population

Authors: D. Terrell, D. Langhorst, L. Phipps, N. Karjane, C. Smith, and D. Svikis

Departments: Institute for Women's Health, School of Social Work, Pharmacy, Obstetrics and Gynecology, Psychiatry, and Psychology

Background: The social stigma associated with alcohol and drug problems leads many individuals with such problems to minimize or deny use. The problem of underreporting is particularly significant among pregnant women, who face not only the social stigma of admitting to prenatal use, but often also the fear of legal consequences such as being reported to Child Protective Services (CPS) or facing arrest and/or incarceration.

Objectives: The present study, in preparation for a larger clinical trial targeting HIV/STD prevention in pregnant women at risk for alcohol/drug problems, collected anonymous survey data from pregnant women attending the VCUHS OB clinic that will serve as the site for the intervention study.

Methods: While waiting to see their practitioners 101 women completed the survey and all were assured that no information would be collected that could link their answers to their name or medical record. The survey asked about practical issues related to the upcoming randomized clinical trial. In addition, it included standardized screening questions for smoking as well as alcohol (TWEAK) and drug (Drug CAGE) problems.

Results: Demographically, the women were predominantly African American (67.3%) and nearly half (45.5%) were between 18 and 23 years of age. The rate of tobacco use (smoking at least one cigarette in past 7 days) was 17.8 %, which was somewhat lower than the rate reported for this clinic in a study conducted two years ago (25.5%). Close to one-third of the sample (30.7%) was categorized as "at risk" for prenatal alcohol and/or drug problems. Approximately 12% of the pregnant women obtained elevated TWEAK scores; 15% obtained elevated Drug CAGE scores, and 4% obtained elevated scores on both the TWEAK and Drug CAGE measures.

Conclusions: While these rates are likely to be underestimates of actual prenatal alcohol and drug use, they confirm that many pregnant women are at risk for such problems and that strategies are needed to help practitioners find ways to more systematically assess for substance use and provide resources and referrals to women at risk.

Disclaimer: This research was supported by NCMHD P60 MD002256.

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Poster Title: Formation and Efflux of ATP-Binding Cassette (ABC) Transporter Substrate 2,4-

Authors: Soniya S. Vaidya, Scott W. Walsh, and Phillip M. Gerk

Departments: Pharmaceutics and Obstetrics and Gynecology

Objectives: Human placental villous tissue cultures have been underused in the study of placental drug disposition. Thus we assessed the utility of this model by studying the effect of time in culture on the viability and integrity of the tissue and the expression and function of proteins involved in the formation and efflux of 1-chloro-2,4-dinitrobenzene (CDNB) conjugate 2,4-dinitrophenyl-S-glutathione (DNP-SG) as a model system for phase II metabolism and cellular efflux.

Methods: Placental tissue samples were obtained within 30 minutes of cesarean deliveries following normal pregnancies in three patients. Villous tissue was cultured in M199 medium to 48hr. At 2, 4, 6, 10, 24, and 48hr post culture, villous tissue was preincubated without or with ATPase inhibitor sodium orthovanadate, exposed to 100 M CDNB, rinsed and incubated in buffer at 37 C to determine formation and efflux of DNP-SG, which was assayed by HPLC. Changes in expression of GSTP1-1, ABC transporter isoforms B1, C2 and G2 (ABCB1, ABCC2, and ABCG2, respectively) were assessed by immunoblotting. Lactate dehydrogenase (LDH) release, methyl tetrazolium thiazolyl blue (MTT) incorporation, and total tissue glutathione content were monitored up to 48hr. Villous tissue morphology was assessed by immunohistochemistry.

Results: Villous tissue structure and protein expression of glutathione-S-transferase isoform P1-1 (GSTP1-1) and ABCG2 remained unchanged over 48hr in culture. Expression of ABCB1 and ABCC2, and total tissue glutathione decreased with culture time. LDH release was unchanged up to 24hr and increased at 48hr, while MTT incorporation remained constant to 10hr and decreased at 24 and 48hr suggesting a decline in tissue integrity and viability at 48hr. However, DNP-SG formation, DNP-SG buffer/tissue ratio, and the extent of inhibition of DNP-SG efflux by sodium orthovanadate remained unchanged through 48hr. Sodium orthovanadate decreased the DNP-SG buffer/tissue ratio by $70.5 \pm 6.90\%$ ($p < 0.05$), consistent with inhibition of apical ABC transporters.

Conclusions: These results support the use of this model to study the coordinated function of metabolizing enzyme GSTP1-1 and apical ABC transporters in the formation and efflux of the model substrate DNP-SG. The model may be useful to study metabolism and transport of other compounds.

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Poster Title: Neutrophil Release of Myeloperoxidase and Matrix Metalloproteinase 8 in Systemic Vasculature of Obese Women May Put Them at Risk for Preeclampsia

Authors: Juhi Shukla, Sonya Washington, and Scott W. Walsh

Departments: Obstetrics and Gynecology and Physiology

Background: Obesity is a risk factor for preeclampsia (PE), but the reason for this risk is unknown. Previously, we found that neutrophils infiltrated into the vasculature of PE women released myeloperoxidase (MPO) and matrix metalloproteinase 8 (MMP8), products that can cause oxidative stress and vascular dysfunction. If neutrophils infiltrate the vasculature of obese women and release MPO and/or MMP8, this may help explain why they are at risk of developing PE.

Objectives: To determine if systemic vascular tissue of obese women will have a significant presence of MPO and MMP8 as a result of neutrophil infiltration.

Methods: Subcutaneous fat, which is highly vascularized, was obtained at abdominal surgery from 5 normal weight, 5 overweight and 5 obese women. Formalin fixed, paraffin embedded 8 μm sections of fat biopsies were stained using immunohistochemistry with specific antibodies for MPO and MMP8. Data were evaluated for intensity of vessel staining by visual score (0-4), density of staining using image analysis software, and % vessels with neutrophil staining, diffuse staining and vascular smooth muscle (VSM) staining. Resistance-sized vessels (10-200 μm) were evaluated.

Results: For MPO, the intensity of staining and the % vessels with neutrophil, diffuse and VSM staining was significantly greater for obese than for overweight or normal weight patients: % diffuse staining (64.6 ± 4.2 vs. 40.4 ± 3.9 vs. 21.8 ± 4.7 , $P < 0.001$); % VSM staining (30.2 ± 6.1 vs. 20.0 ± 5.3 vs. 4.0 ± 2.6 , $P < 0.01$). For MMP8, obese and overweight patients had a greater ($P < 0.001$) % vessels with neutrophil, diffuse and VSM staining than normal weight patients: % diffuse staining (63.0 ± 5.5 vs. 55.2 ± 4.3 vs. 26.0 ± 3.0); % VSM staining (36.8 ± 2.9 vs. 27.4 ± 3.1 vs. 2.8 ± 1.2).

Conclusions: Neutrophils infiltrate the systemic vasculature of obese women and release MPO and MMP8. SPECULATION: Obesity may put women at risk for PE because their vasculature may already be dysfunctional due to neutrophil infiltration and release of MPO and MMP8.
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Poster Title: High Molecular Weight Adiponectin in Women with Polycystic Ovary Syndrome

Authors: Edmond P. Wickham III, Jean-Patrice Baillargeon, John N. Clore, and John E. Nestler

Departments: Division of Endocrinology and Metabolism, Internal Medicine, Virginia Commonwealth University; Division of Endocrinology, Department of Medicine, Université de Sherbrooke.

Background: Adiponectin, an adipokine with antidiabetic properties, forms multimers of different sizes in human circulation. Different isoforms appear to have different biologic activity with high molecular weight (HMW) adiponectin most closely correlating with insulin sensitivity. Although total adiponectin levels are decreased in women with polycystic ovary syndrome (PCOS), alterations of HMW adiponectin in PCOS remain unclear.

Objectives: We hypothesize that HMW adiponectin levels are decreased in women with PCOS compared to normal controls, and that HMW adiponectin levels correlate inversely with insulin sensitivity and testosterone levels.

Methods: Total and HMW adiponectin levels were measured in 13 women with PCOS and 13 age and BMI-matched normal controls. Waist-to-hip ratios (WHR) were determined from standardized anthropometric measurements. Fasting plasma glucose, insulin, sex hormone binding globulin (SHBG), total testosterone, total and HMW adiponectin levels were measured. Total adiponectin levels were quantified using a commercially available sandwich ELISA, and HMW adiponectin levels were determined after pretreatment with a protease that selectively digests low and middle molecular weight species. Free testosterone was calculated from SHBG and total testosterone, and insulin sensitivity (Si) was determined using a frequently sampled intravenous glucose tolerance test.

Results: Both total and HMW adiponectin ($p < 0.01$) were lower in women with PCOS compared to age and BMI-matched normal women. Furthermore, in women with PCOS, the ratio of HMW to total adiponectin (SA) was decreased ($p = 0.01$) compared to normal women. Considering all women ($n = 26$), HMW adiponectin levels correlated closely with WHR ($r = -0.59$, $p < 0.01$), free testosterone ($r = -0.56$, $p < 0.01$), and Si ($r = 0.64$, $p < 0.001$). Similar significant relationships were observed between total adiponectin and WHR, free testosterone, and Si. SA values also correlated positively with Si ($r = 0.54$, $p < 0.01$).

Conclusions: Women with PCOS have lower total and HMW adiponectin levels compared to normal women. Furthermore, HMW adiponectin comprises a smaller proportion of total circulating adiponectin in women with PCOS. In women with and without PCOS, total and HMW adiponectin levels correlate positively with insulin sensitivity and inversely with the degree central adiposity and hyperandrogenism. Alterations in adiponectin isoform distribution may contribute to the insulin resistance intrinsic to PCOS.

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Poster Title: The Momedemameter: An Affordable Pre-Eclampsia Detector for the Developing World

Authors: Jerome Strauss, Thomas Peng, Ashley Woodward, Dianne Pawluk, and David Burch

Departments: School of Medicine, Obstetrics and Gynecology, Biomedical Engineering

Background: Pre-eclampsia is a well-known cause of maternal morbidity and mortality in the U.S. and is suspected to be a major cause of maternal and neonatal morbidity and mortality worldwide. In the U.S. screening for pre-eclampsia is accomplished by routine blood pressure and proteinuria screening which is often difficult in developing countries due to limited access to care. Peripheral edema is a physical exam finding of pre-eclampsia that is no longer used as a diagnostic criteria in the U.S. but may be a reasonable screening exam for the developing nations.

Objectives: This pilot project is to determine the ability of this measured bracelet to detect maternal edema and screen for pre-eclampsia.

Methods: Enrolled patients will be fitted for a bracelet that is the size of their wrist or ankle circumference plus an additional 10% that is determined by a calibration band. The patient will then wear the bracelet throughout the remainder of the pregnancy. If the bracelet becomes snug around the wrist/ankle the patient will notify her provider as this may indicate significant edema and increase risk of pre-eclampsia. Once the patient delivers data will be collected from the medical record to determine if the patient fulfills clinical criteria for pre-eclampsia. The prevalence of pre-eclampsia is compared between patients where the bracelet or anklet was removed due to tightness of fit versus those where it was not removed.

Results: In progress

Conclusion: This study will hopefully determine a cost effective screening device for pre-eclampsia in developing countries.

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Poster Title: A Polymorphism in the Fetal Comt Gene Is Associated with Preeclampsia

Authors: Lori H. Walsh, BS, BA, Lu Minyan, MD, Mary D. Sammel, ScD, Roberto Romero, MD, and Jerome F. Strauss, III, MD, PhD

Departments: Obstetrics and Gynecology and School of Medicine, Virginia Commonwealth University, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania, and Perinatology Research Branch, NICHD, Hutzel Hospital, Detroit, Michigan

Background: 2-Hydroxyestrogens are metabolized by catechol-O-methyl transferase (COMT) to produce 2-methoxyestradiol (2-ME), a compound with diverse biological activities including inhibition of HIF-1, a transcription factor that mediates cellular response to hypoxia. Circulating levels of 2-ME and placental COMT activity are significantly reduced in preeclampsia, raising the possibility that reduced production of 2-ME contributes to the pathophysiology of preeclampsia by altering placental response to hypoxia. Genetic variation in the COMT gene is linked to COMT activity and has been associated with intrauterine fetal growth restriction.

Objectives: The objective of this study was to determine if a SNP in Exon 4 of the *COMT* gene (rs4818), which does not change amino acid sequence (136Leu136) but reduces COMT mRNA translation, was associated with preeclampsia.

Methods: A case control study was designed to examine the relationship between *COMT* genotypes in mothers and fetuses, with and without preeclampsia. DNA was extracted from maternal and umbilical cord blood from normal pregnancies and those with preeclampsia. Allele discrimination was used for analysis. [The study population was predominantly (>95%) African-American.]

Results: The study population was predominantly (>98%) African-American. The frequency of the minor rs4818 G allele, which is associated with low COMT activity, was similar in maternal cases and controls (Cases: 19%; Controls: 23%, $P=0.5$), but was significantly greater in fetal DNA from 35 pregnancies complicated by preeclampsia compared to 55 control pregnancies (G allele frequency Cases: 34%; Control: 16%; $P<0.001$). Likewise, fetal carriage of the rs4818 G allele conferred a significantly greater risk of preeclampsia (Odds Ratio: 1.74; 95% C.I.: 1.22, 2.48, $p<0.0045$). There was also a significant discordance between paired maternal and fetal rs4818 genotypes with significantly greater discordance for the G allele in fetuses hosted in preeclamptic pregnancies (Odds Ratio: 3.17; 95% C.I.: 1.19, 8.49).

Conclusions: We conclude that genetic variation in the COMT gene is associated with risk of preeclampsia, possibly through a mechanism involving reduced production of 2-ME.

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