ABSTRACT: According to the CDC (2017), more women than men have died from heart disease over the last 20-25 years. Yet, premenopausal women are protected against heart and cardiovascular disease (CVD) compared to age-matched men. The cellular and molecular mechanisms underlying the transition from premenopause/perimenopause (CVD-resistant) to postmenopause (CVD-susceptible) in women is unknown and is the focus of this project. The critical barrier impeding translational progress is the lack of appropriate models to study menopause. Most studies have used surgical removal of ovaries (ovariectomy) as a model of menopause; yet this technique poorly recapitulates the natural, physiological transition to menopause that 90% of women experience. We overcome this barrier with administration of the chemical, 4-vinylcyclohexene diepoxy (VCD), where we can mirror progressive ovarian failure and preserve the critical “perimenopause” transitional period, identical to humans. Using this model, we demonstrate that perimenopausal, like cycling (premenopausal) females, are protected from pathological angiotensin II (Ang II)-induced cardiac remodeling, while menopausal females are not. Our novel finding that perimenopausal females remain protected, despite irregular cycling (prior to complete loss of estrogen), underscores the importance of studying the role of estrogen in CVD, across the transition from perimenopause to menopause. Multiple molecular, genetic and cellular mechanisms have been suggested to underlie protection against CVD in non-cycling females, many of which put estrogen as the key mediator. We discovered that one of these pathways, the adenosine monophosphate-activated kinase (AMPK) signaling axis, is activated by estrogen through direct binding of estrogen receptors to the α-catalytic subunit of AMPK. Taken together with our published and preliminary data, we hypothesize that loss of AMPK signaling is responsible for the exacerbated pathological cardiac remodeling in menopause. To date, there are no studies that have tested the ability of AMPK activation to mitigate menopausal susceptibility to CVD. **Aim:** Determine if AMPK is necessary and/or sufficient to impart protection against pathological cardiac remodeling in menopausal females. **Summary:** We plan to determine the cellular and molecular mechanisms in premenopausal and perimenopausal females that prevent associated cardiovascular morbidities; and determine the underlying shift that gives rise to increased susceptibility to CVD in menopausal females.

*Please join us on*

**Monday, April 29th, 2019**

12:00-12:50 pm, Keating Bldg., Room 103

Refreshments will be available at 11:50 am

**Host:** Minkyu Kim, Ph.D. & Judith Su, Ph.D.

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Persons with a disability may request a reasonable accommodation by contacting the Disability Resource Center at 621-3268 (V/TTY).