Name: Allison Spillane

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Major Professor: Bikash Pattnaik

Degree Objective: PhD Endocrinology and Reproductive Physiology, Univ WI Madison

Education:

BS Biology-Biomedical Science

UW-Madison 2014-2017

Transferred and Graduated from Univ CO Colorado Springs 2017 – 2018

PhD Endocrinology and Reproductive Physiology, Univ WI Madison 2019 – present

Positions Held:

Associate Research Specialist 2019

Current Research Project:

Issues concerning female reproductive tract diseases, such as morbidity, hospitalization, and surgery, could be circumvented via the use of target gene therapy. One particular gene that would be a candidate for gene therapy is *KCNJ13*. This gene encodes for an inwardly rectifying potassium channel, Kir7.1, that is located in the kidney, stomach, intestines, brain, uterus, and retinal pigmented epithelium (RPE) cells in the eye. In the uterus, Kir7.1 is important for preventing contractions of the uterus during gestation, thus, preventing preterm labor. Patients with mutations in this gene have been identified and also suffer from pediatric blindness called Leber's Congenital Amaurosis (LCA16), due to loss of function of Kir7.1 in the RPE cells of the eye. However, it is unknown if these mutations will cause effects in the uterus of these patients during pregnancy. We are interested in using an adeno-associated virus (AAV5) viral gene therapy approach to treat possible effects of KCNJ13 mutations in the uterus, by delivering a wild-type open reading frame (ORF) of *KCNJ13* to uterine myometrium tissue. We are currently testing a clinical grade AAV5 viral gene therapy, HUB 101, to deliver healthy *KCNJ13* ORF to RPE cells in vitro, using mouse RPE and human fetal RPE (hfRPE). These studies will test the efficacy and safety of HUB 101 before its use in human clinical trials for LCA16 patients. As the uterine effects in these patients are currently unknown, we plan to modify HUB 101 to transduce uterine myometrium and deliver *KCNJ13* to this tissue. The uterine gene therapy will contain a myometrium specific promotor, p125CAT. We will test this therapy on mouse uterine tissue, so that we are able to differentiate between endogenous m*Kcnj13* and exogenous h*KCNJ13* coming from our gene therapy. We expect the gene therapy to successfully transduce uterine myometrium tissue in vitro, transcribe healthy Kir7.1 protein, and, therefore, decrease contractility of the myometrium tissue.

Honors:

- Sarla P. Kothary Memorial Travel Grant, ARVO 2021 Annual Meeting 2021
- Trainee Member, McPherson Eye Research Institute, University of Wisconsin-Madison 2020-Present
- Sponsored spot in summer course, McPherson Eye Research Institute 2020

National Presentations:

1. Selected for Oral Presentation: Spillane A, Beverley K, Shahi PK, Macdonald S, Hall SM, Sabados J, Pattnaik BR (2021) "Preclinical Testing of HUB-101, a Potential Gene Therapy for LCA16" *The Association for Research in Vision and Opthalmology 2021 Annual Meeting.* Virtual. Abstract 3546931.

Other Presentations:

1. Oral Presentation: Spillane A, Beverley K, Kabra M, Shahi PK, Pattnaik BR (2021) "Viral Gene Therapy from the Lab to the Clinic" Endocrinology and Reproductive Physiology Seminar. March 11, 2021.
2. Oral Presentation: Spillane A, Kabra M, Shai PK, Pattnaik BR (2020) "Making a Nonsense Make Sense" MERI Fall Trainee Symposium, 2020. October 15, 2020.
3. Poster Presentation: Lutz A, York N, Pillers DM, Pattnaik BR (2016) "Ontogeny of Oxytocin Receptor in the Mouse Eye" Introductory Biology 152 Mentored Research Poster Session. April 25, 2016.

Teaching and Mentorship:

Yozgat Bozok University Medical School – Department of Biophysics, Presentation: "Viral Gene Therapy Development from the Lab to the Clinic" January 9, 2021

Clara Yu, Undergraduate – August 2019 – May 2020 – Mentorship

ERP Service:

- ERP Student Committee 2020-Present