BIOGRAPHICAL SKETCH

NAME: Steven Ghanny

eRA COMMONS USER NAME (credential, e.g., agency login):SGHANNY1

POSITION TITLE: Physician/Research Director, Pediatric Endocrinology and Diabetes

EDUCATION:

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Stevens Institute of Technology, Hoboken,NJ	BS	05/1999	Chemical-Biology
UMDNJ-Graduate School of Biomedical Sciences, Newark, NJ	MS	06/2001	Biomedical Sciences
UMDNJ-New Jersey Medical School, Newark,NJ	MD	06/2005	Medicine
UMDNJ-New Jersey Medical School, Newark,NJ		06/2008	Pediatrics(residency)
SUNY Downstate Medical Center, Brooklyn, NY		06/2012	Pediatric Endocrinology (fellowship)

A. Personal Statement:

I have always had a great interest in steroid research. During my time in fellowship, I was a sub-investigator on a project that identified subgroups of patients with PCOS and premature adrenarche that was caused by glucocorticoid resistance, which was a new finding in this field. In investigating this population, I created a fluorescein labeled dexamethasone (F-Dex) monocyte binding assay to measure glucocorticoid sensitivity. This work in PCOS and premature adrenarche resulted in a publication in the Journal of the Endocrine Society. The assay was also validated to predict steroid response in nephrotic syndrome patients, the studies of which have also been published. Currently, I am a principal investigator on a pilot study examining glucocorticoid sensitivity of donor and recipient pairs that are undergoing stem cell transplant using the F-Dex assay. Our goal in this project is to validate whether the F-Dex assay will be able to identify steroid refractory acute graft versus host disease patients. Once these patients are identified, the steroid resistant state is further elucidated in humanized mouse models. Data obtained from this study will help guide the management of these patients. I am also a principal investigator on a project using the F-Dex assay to measure glucocorticoid sensitivity using cord blood monocytes of preterm and term infants. This work has validated that cord blood monocytes can be used to study glucocorticoid sensitivity in neonates. It has also shown that changes in glucocorticoid sensitivity may also be involved in protecting the fetus from the cortisol surge of mothers in labor. This work has resulted in multiple poster presentations. The work done in term infants has also resulted in an AAP grant for the resident working on this study. I am also a principal investigator on project using the F-Dex assay to measure glucocorticoid sensitivity in patients with asthma who have suppression of their HPA axis on inhaled corticosteroids. The preliminary results showed that the cause of the HPA axis suppression was increased sensitivity to steroids in these patients. I am also working on a pilot project evaluating glucocorticoid sensitivity in patients with congenital adrenal hyperplasia to determine proper steroid dosing in these patients.

B. Positions and Honors:

2001	Research Associate, Center for Applied Genomics, Newark, NJ
2005-2008	Pediatric Resident, Department of Pediatrics, UMDNJ-New Jersey Medical School, Newark, NJ
2008-2009	Clinical Assistant, Division of Pediatric Endocrinology, Hackensack University Medical Center, Hackensack, NJ
2009-2012	Fellow, Division of Pediatric Endocrinology, Maimonides Medical Center/SUNY Downstate Medical Center/Kings County Medical Center
2012-present	Attending Physician, Division of Pediatric Endocrinology, Hackensack University Medical Center, Hackensack, NJ
2013-present	Assistant *Professor*, St. Georges University
2017-present	Assistant Professor, Hackensack Meridian School of Medicine

Professional Memberships:
American Medical Association
American Academy of Pediatrics

Honors:
Merck Index Award
Gold Humanism in Medicine Award
Subspecialty Attending of the Year (2017): Rutgers New Jersey Medical School
Physician of the Year: Diabetes Foundation Inc.

C. Contributions to Science:

1. **Glucocorticoid resistance as a cause of polycystic ovarian syndrome (PCOS):** I was a sub-investigator on a pilot study looking at glucocorticoid resistance as a cause of PCOS. We discovered a subset of patients with a PCOS phenotype that had elevated cortisol and hyperandrogenism. Initial mutational analysis of the glucocorticoid receptor gene (NR3C1), as well as the genes coding for the co-receptor FK 506 binding proteins 51, 52(FKBP5 and 4 respectively) was performed. This analysis found that the patients identified had mutations in one or more of these genes. In order to examine the function of the glucocorticoid receptor in these patients, I developed the fluorescein labeled dexamethasone(F-Dex) monocyte binding assay, which demonstrated that the patients identified had decreased F-Dex binding or were glucocorticoid resistant. This led to a change in the management of these patients, since they did not respond to conventional PCOS management. This work was presented at multiple professional conferences as posters and also resulted in a publication in the Journal of the Endocrine Society.

   Publication:
   Panayiotopoulos A, Bhangoo A, Khurana D, Ten S, Michl J, **Ghanny S.** Glucocorticoid Resistance in Premature Adrenarche and PCOS: From Childhood to Adulthood. J Endocr Soc. 2020 Aug 4;4(9):bvaa111. doi: 10.1210/jendso/bvaa111. PMID: 32904537; PMCID: PMC7456159.

2. **Glucocorticoid resistance as a cause of premature adrenarche:** I was a sub-investigator on a study looking at glucocorticoid resistance as a cause of premature adrenarche. Most patients identified as having premature adrenarche have an unknown cause. We hypothesized that glucocorticoid resistance could be a cause of the elevated androgen levels seen in premature adrenarche. Initial mutational analysis of the glucocorticoid receptor gene (NR3C1), as well as the genes coding for the co-receptor FK 506 binding proteins 51, 52(FKBP5 and 4 respectively) was performed. This analysis found that the patients identified had mutations in one or more of these genes. Analysis using the F-Dex monocyte binding assay demonstrated that the patients identified were glucocorticoid resistant. This led to a new discovery in this field. This work was presented at multiple professional conferences as posters and also resulted in a publication in the Journal of the Endocrine Society.

   Publication:
   Panayiotopoulos A, Bhangoo A, Khurana D, Ten S, Michl J, **Ghanny S.** Glucocorticoid Resistance in Premature Adrenarche and PCOS: From Childhood to Adulthood. J Endocr Soc. 2020 Aug 4;4(9):bvaa111. doi: 10.1210/jendso/bvaa111. PMID: 32904537; PMCID: PMC7456159.

3. **Study of glucocorticoid sensitivity in patients with nephrotic syndrome treated with steroid therapy:** I was a sub investigator on a study using the F-Dex assay to measure steroid sensitivity in patients with idiopathic nephrotic syndrome treated with steroids. The study demonstrated that the F-Dex assay was able to predict steroid response in this population. This work resulted in a publication.

Publication:
Mongia A, Bhangoo A, Ten S, Michl J and **Ghanny S** Glucocorticoid Sensitivity in vitro can predict the Clinical Response to Steroid Therapy in Children with Idiopathic Nephrotic Syndrome. International Journal of Endocrinology and Diabetes

4. **Study of glucocorticoid sensitivity in preterm and term neonates using cord blood: monocytes**: I am also a principal investigator on a project using the F-Dex assay to measure glucocorticoid sensitivity using cord blood monocytes of preterm and term infants. This work to date has validated that cord blood monocytes can be used to study glucocorticoid sensitivity in neonates. It has also shown that changes in glucocorticoid sensitivity may also be involved in protecting the fetus from the cortisol surge of mothers in labor. This work has resulted in multiple poster presentations. The work done in term infants has also resulted in an AAP grant for the resident working on this study.
    a. Arun Kashyap MD, Michael Giuliano MD, Abdulla Al-Khan MD,Manuel Alvarez MD, Jesus Alvarez-Perez MD, Gianna Suyanova and **Steven Ghanny MD(**2015) Use of a Cord Blood F-Dex Monocyte Binding Assay to Study the Glucocorticoid Receptor in Neonates (presented as platform and poster presentations at ESPE 2015 in Barcelona Spain)
    b. Adaora Madubuko MD, Michael Giuliano MD, Abdulla Al-Khan MD, Manuel Alvarez MD, Jesus Alvarez-Perez MD, Sarah Balboul and **Steven Ghanny MD**(2016) Use of a Cord Blood F-Dex Monocyte Binding Assay to Study the Glucocorticoid Sensitivity in Preterm Neonates(presented as poster presentation at ESPE 2016 in Paris, France)
    c. Turner C, Haleem S, **Ghanny S,** Malik S, Kashyap A, Madubuko A Comparing Glucocorticoid Receptor Binding Affinity in Full Term Neonates Delivered to Laboring versus Non-Laboring Mothers (ESPR 2020-Accepted as poster presentation -Conference cancelled due to COVID 19)
    d. Turner C, **Ghanny S**, Malik S Comparing Glucocorticoid Receptor Binding Affinity in Full Term Neonates Delivered to Laboring versus Nonlaboring Mothers(presented as a platform presentation at PAS 2021)

5. **Study of glucocorticoid sensitivity in recipient/donor pairs undergoing stem cell transplant:** I am a principal investigator on a study to determine whether the fluorescein labeled dexamethasone(F-Dex) binding assay used on donor and recipient peripheral blood monocytes (PBM) correlates with steroid resistance in patients with acute GVHD(aGVHD) with no response within a defined time period after initiation of methylprednisone therapy**.** Once these patients are identified, the steroid resistant state is further elucidated in humanized mouse models. This study is also exploring whether genetic and/or epigenetic changes may be involved in causing the steroid resistance seen in these patients with aGVHD. These studies will help to find improved ways to identify these patients earlier, as well as to study the mechanisms of the steroid resistance, to enable and adapt interventions accordingly. This work has resulted in multiple poster presentations.

    a. Alfred Gillio MD, Jennifer Krajewski MD, Nancy Durning APN, Jeanette Haugh APN, Gina Dovi RN, Sarah Balboul and **Steven Ghanny MD(**2016) Use of an F-DEX binding assay to measure steroid responsiveness of patients and their related donors undergoing stem cell transplant(presented as a poster presentation at ESPE 2016 in Paris, France)
    b. Alfred Gillio MD, Jennifer Krajewski MD, Michele Donato, Nancy Durning APN, Jeanette Haugh APN, Sarah Balboul and **Steven Ghanny MD**(2018) Early Identification of Steroid Resistant Acute Graft-Versus-Host Disease Patients Following Stem Cell Transplant (presented as a poster presentation at ESPE 2018 in Athens, Greece)
    c. **Steven Ghanny** Thomas S. Gunning, Jack Cucchiara, Jeanette Haugh, Nancy Durning, Robert Korngold, Yi Zhang, Christina Cho, Alfred Gillio(2024) Use of an F-Dex Monocyte Binding Assay to Measure Steroid Responsiveness of Patients with Acute Graft versus Host

Disease(presented as a poster presentation at 1st International Conference on Steroid Hormones and Receptors in Albuquerque NM)

6. **Study of glucocorticoid sensitivity in patients with asthma on inhaled corticosteroid therapy** I am a principal investigator on project using the F-Dex assay to measure glucocorticoid sensitivity in patients with asthma who have suppression of their HPA axis on inhaled corticosteroids. The preliminary results showed that the cause of the HPA axis suppression was increased sensitivity to steroids in these patients. The preliminary data on this work resulted in a publication.

   Publication:
   Ghanny S, Aisenberg JE, Heinemann J, Ten S, Bhangoo A. A Report of 3 Cases of Adrenal Suppression Due to Glucocorticoid Hypersensitivity to Inhaled Corticosteroids. JCEM Case Rep. 2025 Mar 17;3(4):luaf039. doi: 10.1210/jcemcr/luaf039. PMID: 40103859; PMCID: PMC11911910.

7. **New advances in diabetes care:** The other part of my research career focuses on advances in diabetes care. I was a sub-investigator on a study identifying monogenic diabetes in patients who were initially diagnosed with Type 1 DM. We studied a cohort of 30 patients and out of these, we found that about 27 had mutations in the HNF1A gene, which causes MODY3. We were able to change the diabetes regimen in these patients from insulin to oral sulfonylurea therapy with stable HbA1C and blood sugars. I am also the principal investigator on a study using a technology platform to help manage adolescents with Type 1 DM. In addition, I am the principal investigator on a study using tablet technology to educate newly diagnosed Type 1 DM patients and families. I also published a new genetic methodology to identify Type 1 DM patients at risk of developing Addison's disease. I also was on the study team using the Stem Cell Educator in patients with Type 1 DM.

   My work on monogenic diabetes was presented at multiple professional conferences as posters.
   a. **Steven Ghanny, MD**, Lina Nie, MD/PhD, Dujuan Tan, MD/PhD, Sheila Perez, MD, Sonal Bhandari, MD, Felicitas Lacbawan, MD, Amrit Bhangoo, MD and Svetlana Ten, MD(2011) HNF1A is a frequent reason of insulin dependent diabetes in children with and without islet cell antibodies with good response to sulfonylurea therapy(presented as oral presentation at ESPR 2011 in Philadelphia, PA and presented at PAS/LWPES 2011 in Denver, CO)
   b. **Steven Ghanny, MD**, Lina Nie, MD/PhD, Dujuan Tan, MD/PhD, Iuliana Predescu, Natia Pantsulaia, MD, Sheila Perez, MD, Sonal Bhandari, MD, Felicitas Lacbawan, MD, Amrit Bhangoo,MD and Svetlana Ten, MD(2011) HNF1A mutations in a Cohort of Pediatric Patients(presented as poster presentation at ESPE 2011 in Glasgow, Scotland)

   My work in creating a technology platform was presented at a professional conference as a poster.
   a. Rachel Rothenberg APN, Mary Zetelski LCSW, Javier Aisenberg MD, Mary-Ellen Riordan RN, Justine Zasa CCRP and **Steven Ghanny, MD**(2015)Use of Smartphone, a Cellular Glucometer and Social Media App in the Management of Type 1 DM in the Adolescent Population: The Future of Diabetes Care(presented as poster presentation at ESPE 2015 in Barcelona Spain)

   My work on the project using tablet technology to educate newly Type 1 DM patients and families was presented at a professional conference as a poster.

   a. Javier Aisenberg, Lynda Rosini, CDE, Jeanette Haugh, Susan Mathus, Michele De Vito, Toni Cospito, Ingrid Brennan and **Steven Ghanny**(2018) Challenges in Educating New Onset Type 1 Diabetes Mellitus Patients: Can the Use of a Tablet be the Answer? (presented as poster presentation at ESPE conference 2018 in Athens, Greece)

   In addition, my work in designing a new genetic methodology to identify Type 1 DM patients at risk of developing Addison's disease resulted in a manuscript.
   Ghanny S, Wallerstein R, Chartoff A, Post J, Aisenberg J, Auyeung V. Six year old with autoimmune polyglandular syndrome: can genetics tell us the story? J Pediatr Endocrinol Metab. 2010 Jul;23(7):725-8.

My work in diabetes management has also resulted in manuscript.

Publication:

a. **Ghanny S**, Aisenberg J. Management of Pediatric Patients with Type 1 Diabetes, Pediatr Ann. 2014 Mar;43(3):115-20.

Additional Manuscripts in Diabetes:

Publications:

a. Basta C, Ramones K, Agarwal S, Marino G, **Ghanny S**. Severe hypertriglyceridemia: A rare complication of diabetic ketoacidosis in a 3-year-old with SARS-CoV-2 infection. J Clin Transl Endocrinol Case Rep 2021 Dec;22 100099. doi: 10.1016/j.jecr.2021.100099. Epub 2021 Nov 4.
b. Zhao Y, Knight CM, Jiang Z, Delgado E, Van Hoven AM, **Ghanny S**, Zhou Z, Zhou H, Yu H, Hu W, Li H, Li X, Perez-Basterrechea M, Zhao L, Zhao Y, Giangola J, Weinberg R, Mazzone T. Stem Cell Educator therapy in type 1 diabetes: From the bench to clinical trials. Autoimmun Rev. 2022 Jan 31;21(5):103058. doi: 10.1016/j.autrev.2022.103058. Epub ahead of print. PMID: 35108619

D. Research Support:

CARES Foundation Ghanny(PI) 6/1/2024-present

This study is using the fluorescein labeled dexamethasone(F-Dex) binding assay to measure steroid sensitivity in patients with congenital adrenal hyperplasia, in order to determine appropriate steroid dosing in these patients. The findings of this study will help to assure that these patients will be adequately treated with steroids, while avoiding side effects of steroid therapy.

Tackle Kids Cancer Ghanny(PI) 12/20/2023 to present

This is a study to determine whether the fluorescein labeled dexamethasone(F-Dex) binding assay used on donor and recipient peripheral blood monocytes (PBM) correlates with steroid resistance in patients with acute GVHD(aGVHD) with no response within a defined time period after initiation of methylprednisone therapy**.** Once these patients are identified, the steroid resistant state is further elucidated in humanized mouse models. This study is also exploring whether genetic and/or epigenetic changes may be involved in causing the steroid resistance seen in these patients with aGVHD. These studies will help to find improved ways to identify these patients earlier, as well as to study the mechanisms of the steroid resistance, to enable and adapt interventions accordingly.

Verizon Foundation Grant Ghanny (PI) 4/20/2014-5/2016 and 10/2016-present
This study is using technology to assist Type 1 diabetes mellitus patients with their diabetes care. Grant is being used to develop technology, including an app and a social media platform to help patients from 12-22 years of age manage their diabetes better. Endpoint is improvement in blood sugar control, as evidence by an improved HbA1C and increased blood sugar monitoring. In 2016, we received additional funding to do an extension of this study.

Verizon Foundation Grant Ghanny (PI) 1/1/2016-present
This study involves using tablet technology to help educate patients and families with newly diagnosed Type 1 diabetes mellitus in the inpatient setting.