

**Fairfax County and Inova
Translational Medicine Institute
partnership update**

Fairfax County Economic Advisory Commission
February 12, 2019

Our partnership with Fairfax County



- Fairfax County and Inova have been partners since 2014 to help drive healthcare innovation that has a **meaningful impact on the lives of patients in our community**
- Our partnership has **helped seed cutting edge research studies** focused on answering tough medical questions about childhood development, rare disorders and chronic diseases
- Our partnership has created a foundation of capabilities that **facilitates development of practical tools** that use genomic information to influence patient care today
- Our partnership continues to build upon this powerful foundation of innovation to **help attract other government, academic and commercial partners**
- We look forward to continuing our strong partnership with the County moving forward as we look to **help build a vibrant healthcare innovation ecosystem in Northern Virginia**

- **Evolution of our research**

- Research began with the pre-term birth and congenital abnormality studies
- These studies evolved into the Fairfax County Childhood Longitudinal Study
- Our experience with the Fairfax Study allowed us to be competitive and win a grant from NIH's ECHO Program (Environmental Influences on Childhood Health Outcome)
- Our experience with the Fairfax Study has also facilitated research in other novel areas, such as microbiome
- Our foundation in genomics has enabled development of practical tools, such as MediMap, which apply genomics to improve patient care today

- **Evolution of our partnerships**

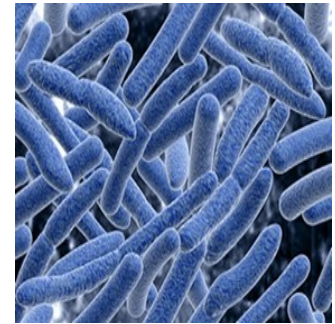
- Research partnership began with Fairfax County and ITMI
- ECHO brought in NIH funding, as well as partnerships with Harvard University, the University of North Carolina and Mount Sinai Hospital in New York
- Our collective innovation portfolio has helped add as initial partners on the ICPH campus the Commonwealth of Virginia, the University of Virginia and George Mason University

Share examples of how our partnership is starting to impact our community

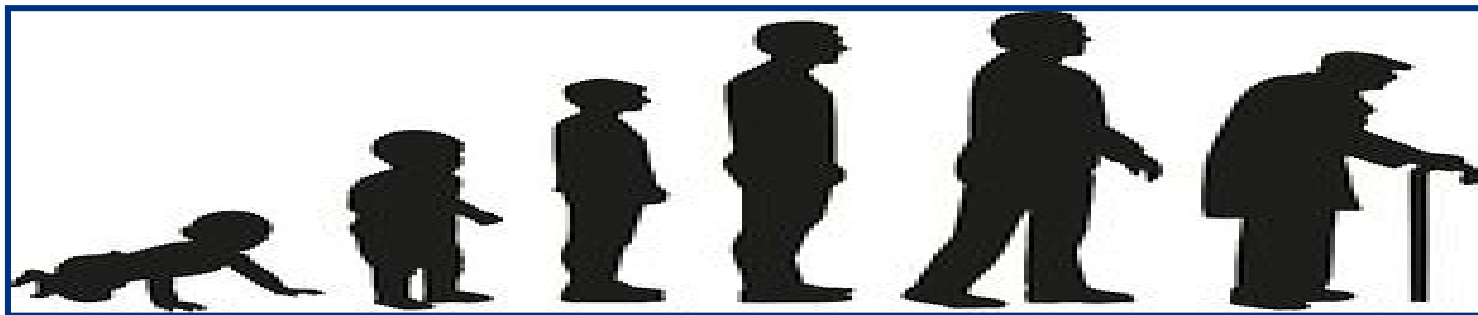
- Microbiome – Suchi Hourigan
- MediMap – Franzi Moeckel
- ECHO – Kathi Huddleston

What is microbiome?

- Community of “bugs” living in our gut
- Play an essential role in:
 - Development of immune system
 - Development of metabolic system



- Development of the gut microbiome in early life may shape future health



- | | | |
|--------------------------------------|-----------|-------------------|
| – Allergies | – Obesity | – Diabetes |
| – Necrotizing
Enterocolitis (NEC) | – Asthma | – Heart disease |
| | – Autism | – Certain cancers |

- Manipulation of the microbiome can improve health
 - Probiotics and Prebiotics
 - Diet
 - Fecal transplant
 - Vaginal seeding



- Vaginal Seeding Study is the first FDA approved study on the effectiveness of vaginal seeding in babies born by C-Section
- >20 abstracts presented at national conferences, several publications
- Significant interest in vaginal seeding research from philanthropic donors, academic institutions (Johns Hopkins University) and commercial partners

Pharmacogenomic testing: MediMap

- A clinician ordered, genetic test that can help determine the right medication for an individual.
- Pharmacogenomics (PGx) = using genetics to help pick right drug and right dose for each patient
- **8,500+** patients tested in 2018
- **79%** of adults have at least 1 result suggesting a medication or dose change
- **100+** clinicians educated on PGx



MediMap[®]



PGx use in Patient Care:

- Orthopedic Surgery
- Breast Cancer Surgery
- Primary Care: Simvastatin
- Behavioral Health

Medication Categories Tested:

- Pain
- Anti-nausea
- Psychotropics / ADHD
- Anti-cancer
- Cardiovascular

Our MediMap Research

- MediMap pilot study to examine use of PGx testing to improve patient outcomes for breast cancer patients
- Goal is to determine the feasibility of implementing perioperative PGx testing to optimize clinical outcomes and perioperative care for patients undergoing interdisciplinary breast cancer care.
- Tested 50 patients analyzing 25 genes
- In 48 cases, 51 medication / dosage changes were recommended
- In nearly 60% of surgical cases, a medication or dosage change was recommended
- Our findings were highlighted by the American Society of Breast Surgeons, NBC4 and Inova's annual Breast Cancer Symposium



The Fairfax Childhood Longitudinal Study and NIH ECHO Study

- **Fairfax Childhood Longitudinal Study**

- Following more than 5,000 children from birth to 18 years
- Combining whole genome data, clinical data and parent reported data
- Survey data on nutrition and growth & development
- We track specific health issues (autism risk, asthma, allergies)



- **Environment Influences on Childhood Health Outcomes (ECHO) Study**

- Builds upon the work done for the Fairfax Study
- Very competitive grant funded by the NIH
- Every dollar in NIH funding generates double that in economic growth
- ITMI part of the team, which includes Harvard University, University of North Carolina and Mount Sinai Hospital (NYC), that will study the impact of nutrition, environmental factors and genomics on neurocognitive development



ECHO
Environmental Influences
on Child Health Outcomes
A program supported by the NIH

The Fairfax Childhood Longitudinal Study and Childhood Obesity



- Childhood obesity is a national health issue, having nearly tripled in recent years with more than 17% of young people classified as obese
- Rate of weight gain in just the first few months can be linked to chances of obesity later in life
- Prevalence differs among racial/ethnic groups, with Hispanic children disproportionately affected
 - Nationally, 15.6% of Hispanic children ages 2 to 5 and 5.2% of non-Hispanic white children are obese
 - In Fairfax County, ITMI reviewed data on 1-year-olds from the Fairfax Study: 30% of Hispanic children & 13.6% of non-Hispanic white children are obese
- We are collaborating with the Fairfax County Public School system to see what impact recent increases in recess time for elementary students is having on obesity rates



Thank you to Fairfax County for your continued partnership



- Your critical support has been instrumental in helping to start a strong healthcare innovation ecosystem in Fairfax County
- Our initial partnership with the County has grown to include federal, state, academic and commercial partners
- The Inova Center for Personalized Health brings together the Commonwealth of Virginia, the University of Virginia and George Mason University to further catalyze our healthcare innovation ecosystem
- The partnership between VirginiaTech and Amazon illustrates the potential we have to grow our ecosystem in this region
- We look forward to continuing our partnership with the County



Thank you