

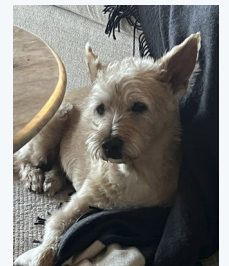
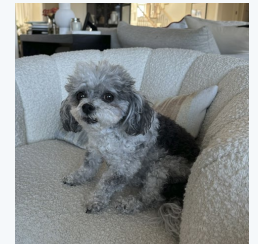
Career Path: From Industry to Large Core

Michael Heinz, Director of Research Operations,
Genome Technology Access Center

In the Beginning.....

SIUE

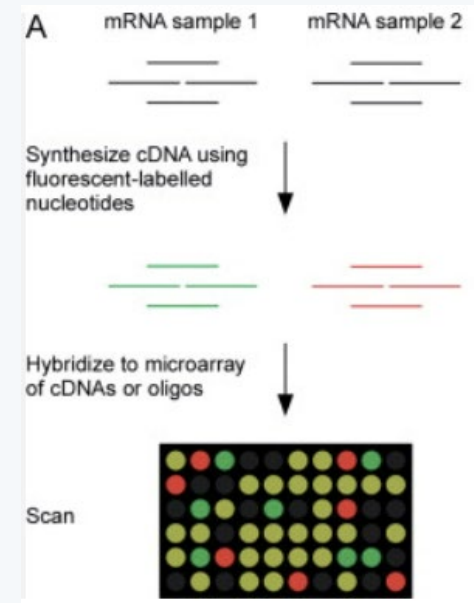
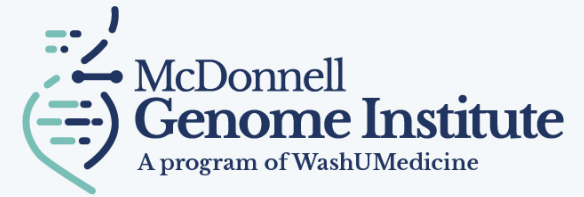
- B.S. Biology (EEE)
- Favorite class/lab: Ichthyology
- I DID like molecular and microbio too!
- Worked two jobs:
 - Wholesale greenhouse
 - Veterinary technician
- **Hindsight:** *I didn't realize it then, but I was already building skills that would shape my entire career*
– Nicky Nicolakis



My First 'Real' Job!

Incyte Genomics, St. Louis

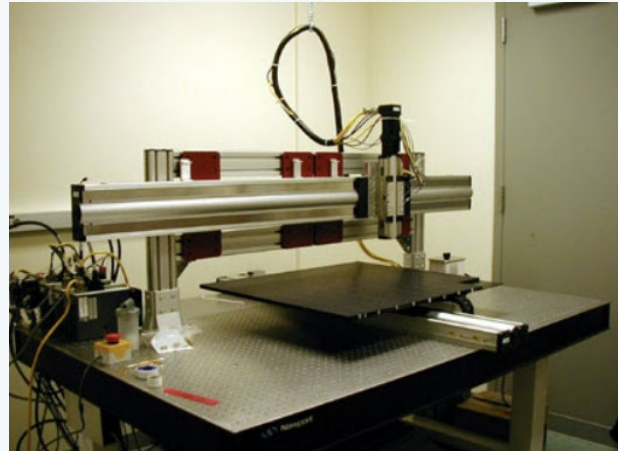
- 1999-2001
- Laboratory Technician
 - GEMs
 - Spotted cDNA microarrays
 - 2-color arrays
 - RNA
- Customer Materials Coordinator
 - Project management
 - CRO



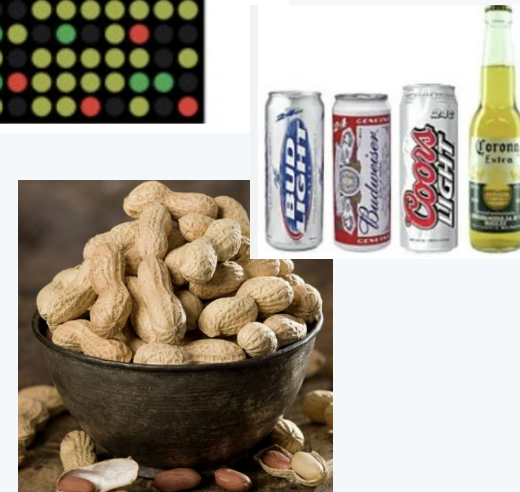
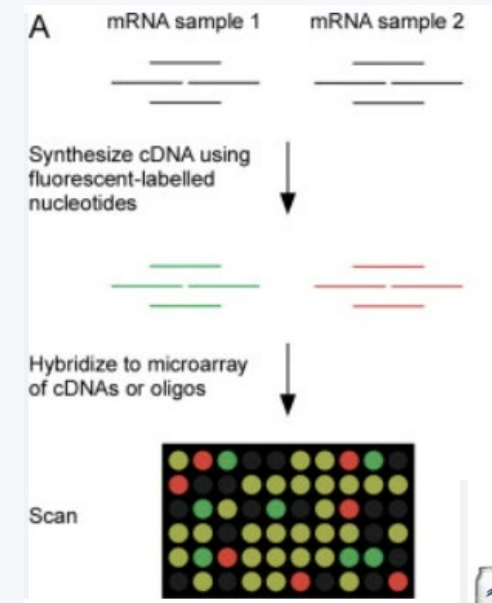
Moving into Academia

Washington University, St. Louis

- 2002
- GSC/Genetics/Microbiology Custom Microarray Core
- # staff = 3
- Laboratory Technician
 - Spotted oligo microarrays
 - Invitrogen/Illumina
 - 2-color arrays
 - RNA and DNA



DeRisi et al.



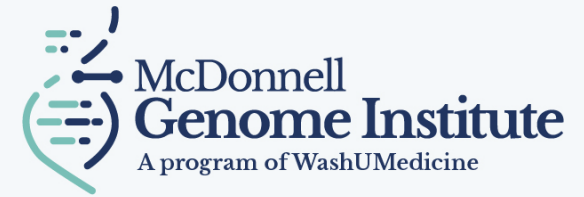
Growing the Lab

Washington University, St. Louis

- ~2005
- GSC/Genetics/Microbiology Custom Microarray Core
- # staff = 5
- Sr. Laboratory Technician, Laboratory Manager
 - Spotted oligo microarrays
 - Illumina Beadarrays
 - Agilent expression and CGH arrays
 - RNA and DNA



Continuing to Grow.... And With Growth Comes Opportunity



Washington University, St. Louis

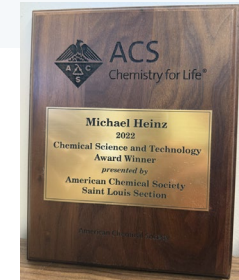
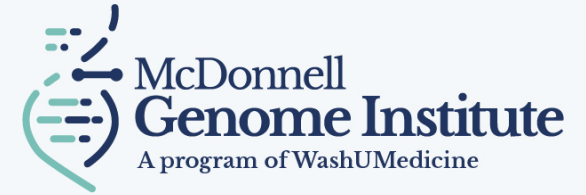
- ~2009 - 2019
- Genetics/GTAC
- # staff = 7 to 27
- Laboratory Manager to Assistant Director
 - Illumina Infinium
 - Agilent expression
 - Illumina sequencing
 - High-Throughput qPCR
 - Bioinformatics
 - Clinical sequencing
 - RNA and DNA



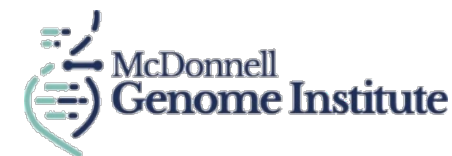
My World Today

Washington University, St. Louis

- 2019, GTAC merged with MGI
- GTAC@MGI
- # staff = 70
- Director of Research Operations
 - HT Proteomics, Infinium, Nucleic Acid Extraction (4)
 - Illumina Library Preparation (10)
 - Illumina Sequencing (5)
 - Long-Read Sequencing (3)
 - Single-Cell and Spatial (6)
 - Project Management (4)



MGI Technology Centers (Cores)



- Target ID, validation
- Lead ID, optimization
- Functional Genomics

- Isogenic cell lines
- CAP/CLIA NGS applications
- Cohort stratification

- Biomarker ID & development
- Efficacy, metabolism, toxicity
- Large & small molecule bioanalysis



Genomics

GTAC

Genome Technology Access Center

65K

.....
Annual genome capacity

- Short-read seq
- Long-read seq
- HTP Proteomics
- Single cell
- Spatial
- Computational biology

Functional Genomics

GESC

Genome Engineering & Stem Cell Center

400

.....
Annual cell line capacity

- Gene editing
- iPSC development & differentiation
- Animal models
- CRISPR screening

Mass Spectrometry

MTAC

Mass Spectrometry Technology Access Center

8K

.....
Annual proteome capacity

- Proteomics
- Metabolomics
- Lipidomics
- Deep-scale PTM analysis
- Spatial omics (MS imaging)

Functional Imaging

FIVE

Functional Imaging for Variant Elucidation

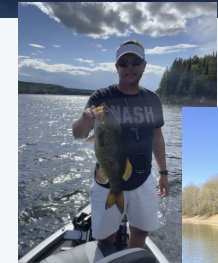
45M

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Cells Phenotyped

- Massively parallel genetic cellular screening
- Drug and arrayed screening
- Organoid analysis & screening
- AI/ML-enabled phenotypic screening

What's Next?

- Stay at WashU?
- Try something different? – Could I function outside of a Core?
- Could I retire? (It was hard to type this without laughing out loud)



- What motivates me?
- Where do I see myself in 5 or 10 years?



Thank You!

