

# **My Career Journey**

**from Academia to Industry**

**Ege Ülgen MD, PhD**

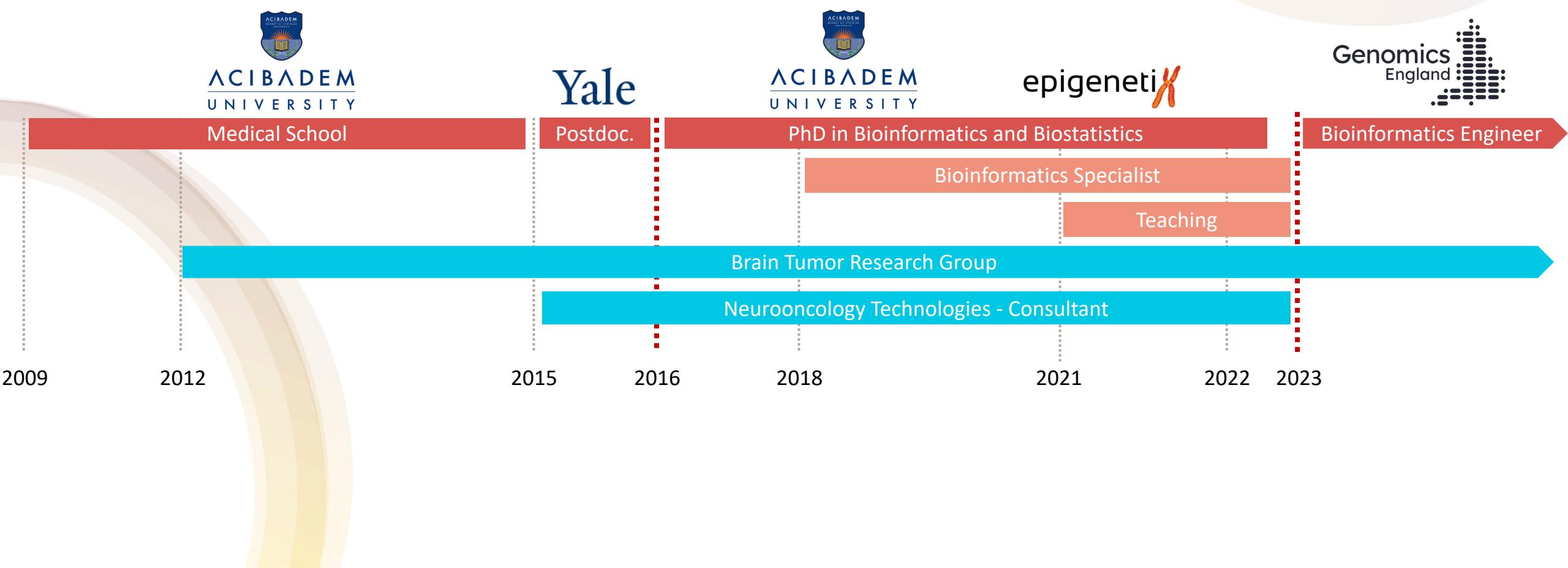
**27 Nov 2023**  
**The Oxford Biochemical Society**



~~Finding~~  
Building my path



# Career Timeline





ACIBADEM  
ÜNİVERSİTESİ

# Initial Involvement in Biomedical Research



Yale University  
School of Medicine

Medical School

Postdoc.

PhD in Bioinformatics and Biostatistics

Bioinformatics Engineer

2009

2015

2016

2023

# ACU Medical School / Yale Internships

- Genetics research on rare diseases
- Introduction to bioinformatics
  - NGS/Whole exome sequencing
  - Variant prioritisation



ACIBADEM  
ÜNİVERSİTESİ



Yale University  
School of Medicine

420 Short Communication

Neuropediatrics

Journal of Pediatric Neurobiology, Neurology and Neurogenetics

## Clinical, Electrodiagnostic, and Genetic Features of Tangier Disease in an Adolescent Girl with Presentation of Peripheral Neuropathy

Huseyin Per<sup>1</sup> Mehmet Canpolat<sup>1</sup> Ayşe Kaçar Bayram<sup>1</sup> Ege Ulgen<sup>2</sup> Burçin Baran<sup>2</sup> Fatih Kardas<sup>3</sup>  
Hakan Gümüş<sup>1</sup> Sefer Kumandas<sup>1</sup> Kaya Bilguvar<sup>2</sup> Ahmet Okay Çağlayan<sup>2,4</sup>



Official Journal of the European Paediatric Neurology Society



### Case study

#### A rare case of congenital fibrosis of extraocular muscle type 1A due to KIF21A mutation with Marcus Gunn jaw-winking phenomenon

Ayşe Kaçar Bayram<sup>a</sup>, Hüseyin Per<sup>a,\*</sup>, Jennifer Quon<sup>b,c,d</sup>, Mehmet Canpolat<sup>a</sup>,  
Ege Ülgen<sup>b,c,d</sup>, Hakkı Doğan<sup>e</sup>, Hakan Gümüş<sup>a</sup>, Sefer Kumandas<sup>a</sup>,  
Nurettin Bayram<sup>f</sup>, Kaya Bilguvar<sup>g</sup>, Ahmet Okay Çağlayan<sup>b,c,d,\*\*</sup>



COLD SPRING HARBOR  
Molecular Case Studies

RESEARCH REPORT

## ALPK3 gene mutation in a patient with congenital cardiomyopathy and dysmorphic features

Ahmet Okay Çağlayan,<sup>1,2</sup> Rabia Gonul Sezer,<sup>3</sup> Hande Kaymakçalan,<sup>4</sup> Ege Ulgen,<sup>2</sup>  
Taner Yavuz,<sup>5</sup> Jacob F. Baranoski,<sup>2</sup> Abdulkadir Bozaykut,<sup>3</sup> Akdes Serin Harmancı,<sup>2</sup>  
Yalim Yalcin,<sup>6</sup> Mark W. Youngblood,<sup>2</sup> Katsuhito Yasuno,<sup>2</sup> Kaya Bilgüvar,<sup>7</sup>  
and Murat Gunel<sup>2</sup>

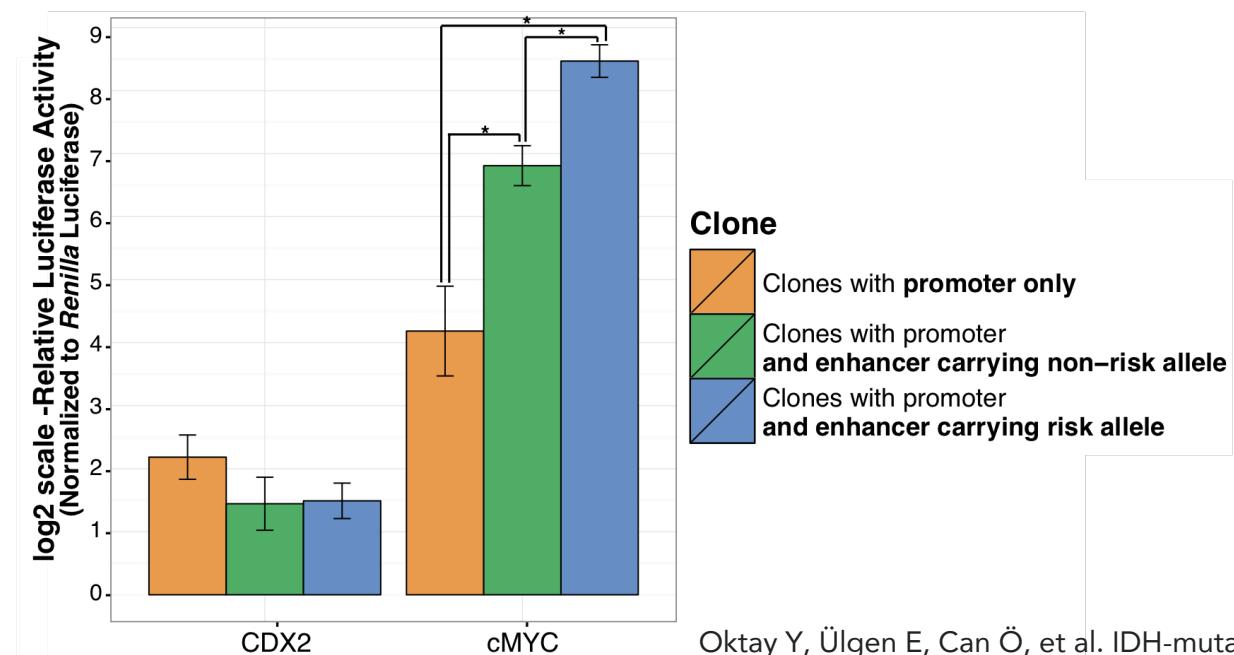
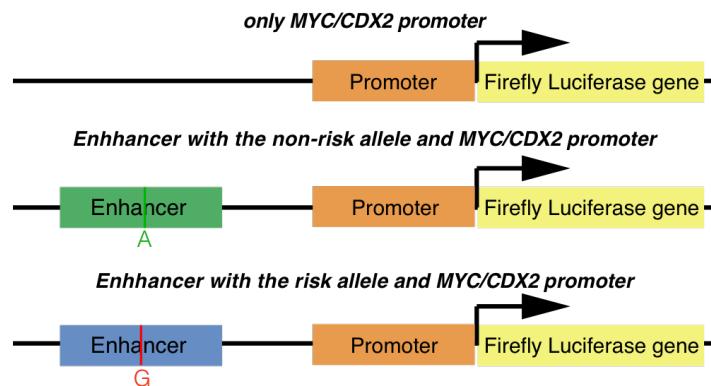
# Brain Tumour Research Group

- Research studies on brain tumours, predominantly gliomas
- Numerous peer-reviewed publications

Nature Sci Rep 2016; J Neurosurg 2018, 2019, 2021; World Neurosurg 2019; Biomedicines 2020; BMC Med Genomics 2021

Integration of knowledge and skills on multiple domains:  
medical, bioinformatics, molecular biology

c)

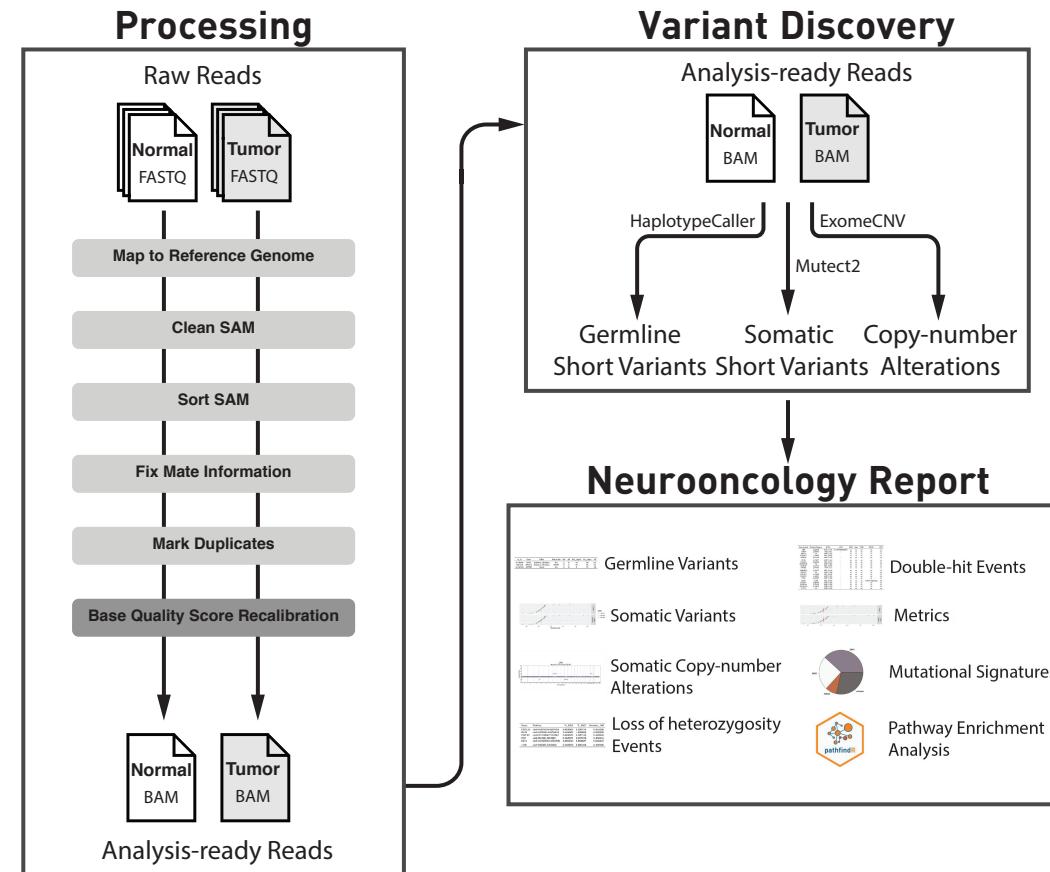


Oktay Y, Ülgen E, Can Ö, et al. IDH-mutant glioma specific association of rs55705857 located at 8q24.21 involves MYC deregulation. *Sci Rep.* 2016;6:27569.

# Neurooncology Technologies

- Bioinformatics consultant
- Implemented and maintained a Whole Exome Sequencing analysis pipeline tailored for gliomas

Collaborative work with neurosurgeons, pathologists and oncologists to produce a personalised oncology product



Ülgen E, Can Ö, Bilguvar K, et al. Sequential filtering for clinically relevant variants as a method for clinical interpretation of whole exome sequencing findings in glioma. BMC Med Genomics. 2021 Feb 23;14(1):54.

# Shift into research path

Medical School

Postdoc.

PhD in Bioinformatics and Biostatistics

Bioinformatics Engineer

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Yale University  
School of Medicine

# Postdoc at Yale

- 6-month postdoctoral work at Yale – Gunel Lab. after graduating as an MD
  - Research focus primarily on intracranial aneurysms
- Gradual shift from a medical specialization to computational research path and decision to start PhD



Yale University  
School of Medicine



# PhD in Bioinformatics and Biostatistics

**Sezerman  
lab**  
if possible...

Medical School

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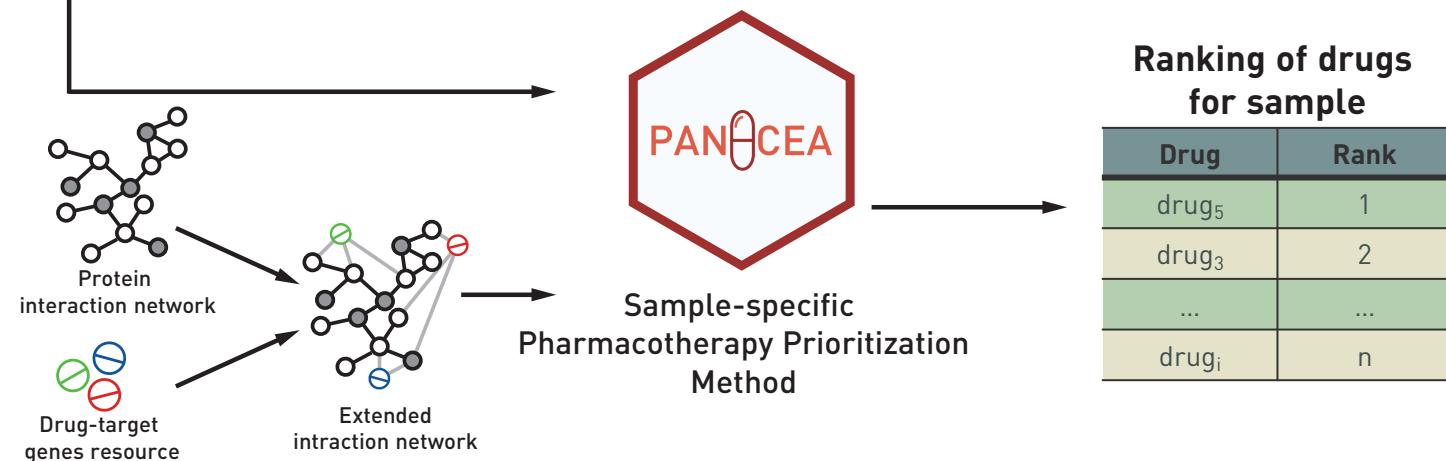
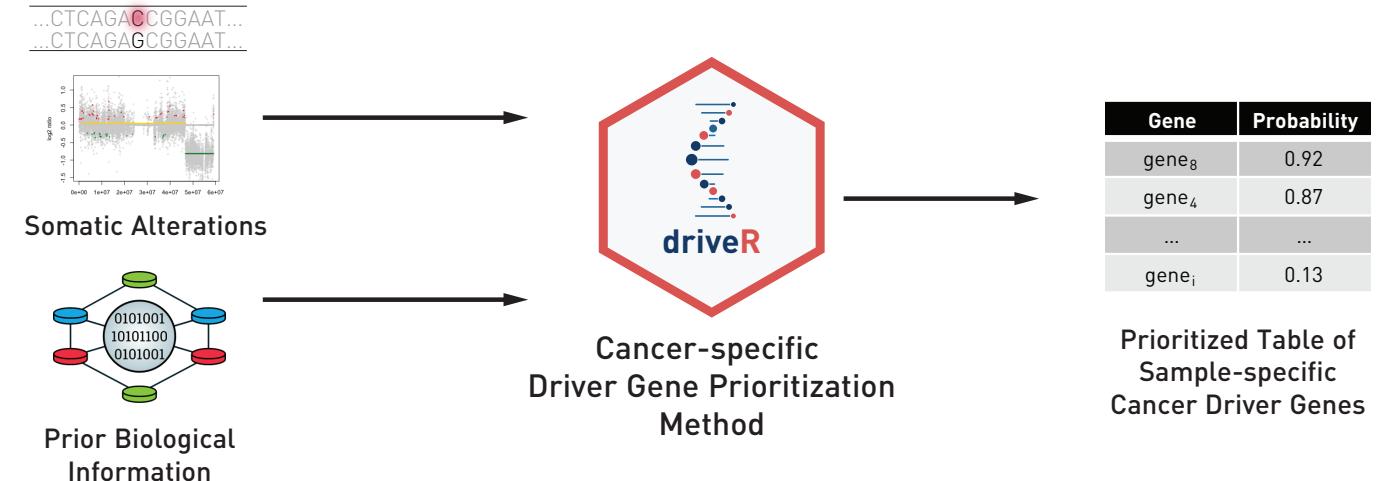
# PhD in Bioinformatics and Biostatistics

- Several peer-reviewed publications
- Co-authored a book chapter on genomic variant discovery and interpretation
- Lecturer for undergrad and grad biostatistics and bioinformatics courses



- Development and maintenance of 3 R packages

# Thesis: my first major contributions to personalised oncology research



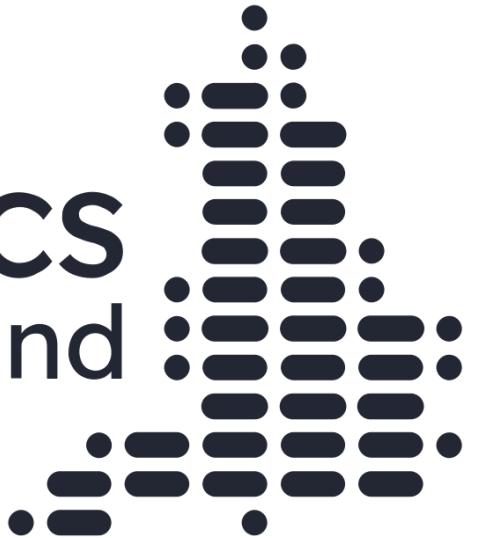
# Epigenetiks – Bioinformatics Specialist

- Implementation/maintenance of:
  - Whole exome sequencing pipelines for **Rare Disease and Oncology**
  - **RNAseq** pipeline
  - **ATACseq/ChIPseq** pipeline
- Small-scale applications

# Transition to Industry

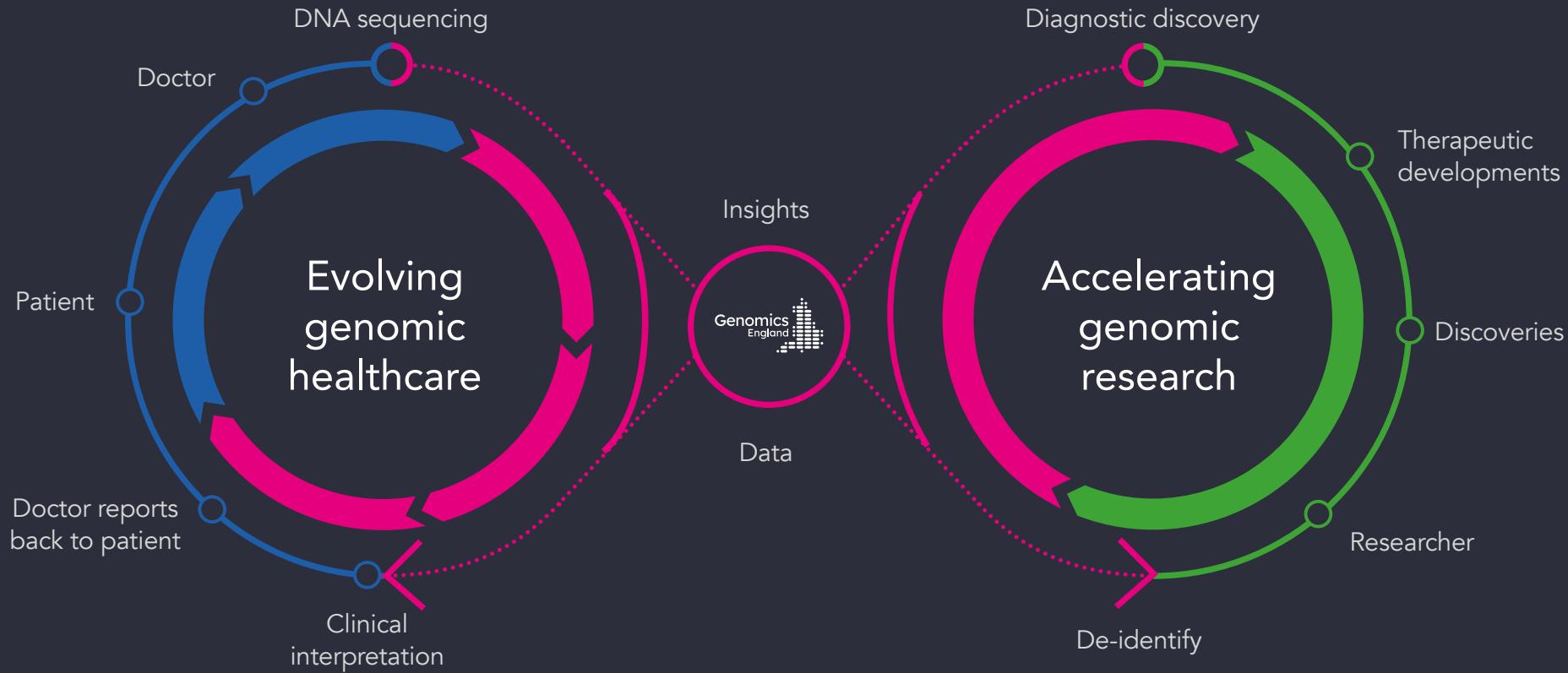


# Genomics England



# Decision to move to an industry job

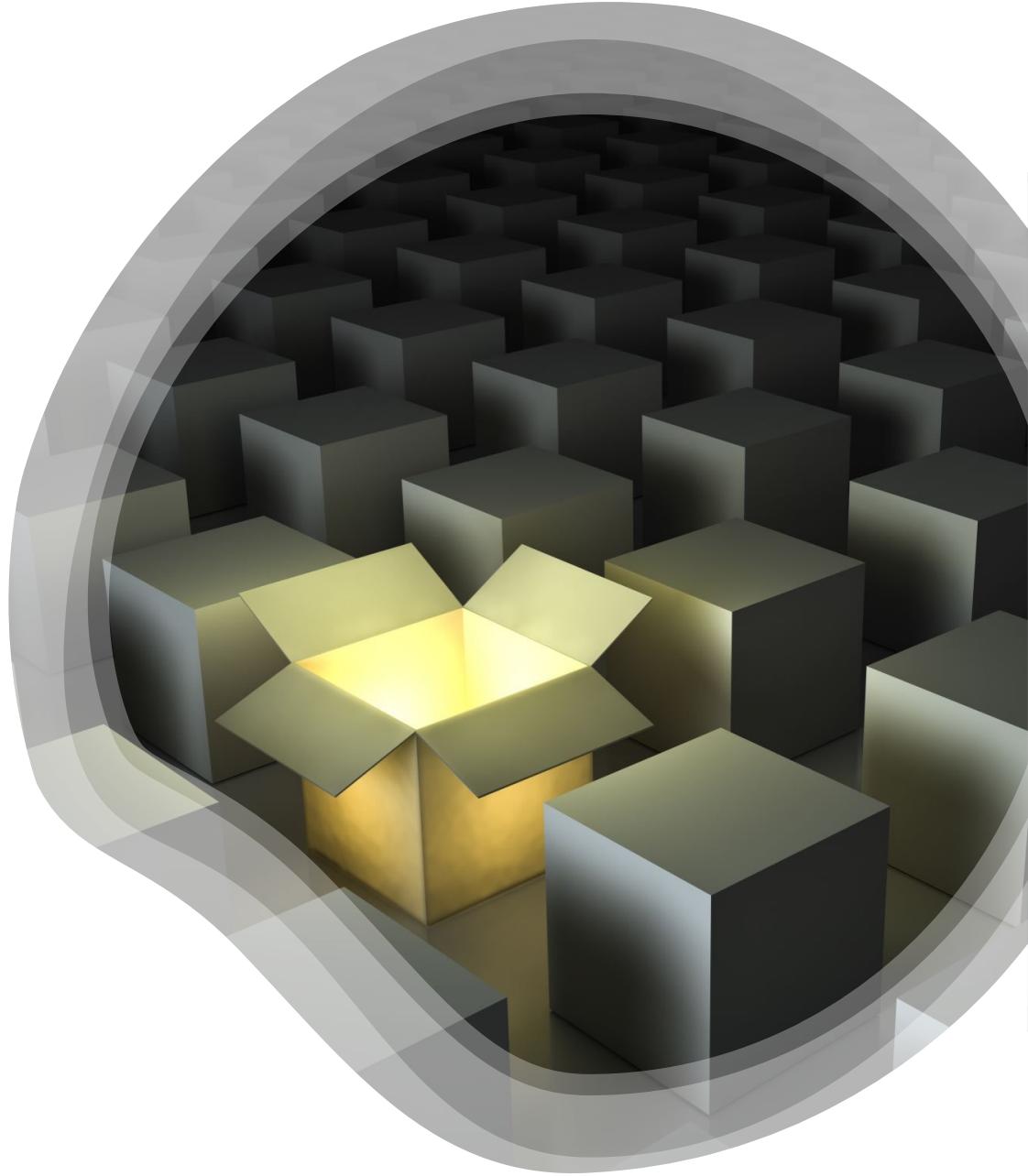
- Alignment with personal career goals
  - Desire for **direct** impact – translating research into industry applications
  - Opportunity for **innovation** and **real-life problem-solving**
- Genomics England
  - Mission to enable the delivery of genomic healthcare
  - Working with the NHS to deliver and continually improve genomic testing



# Genomics England – Bioinformatics Engineering

- SME to provide genomics-based solutions to enable personalised oncology
- Collaborating to create software for the cancer genomic medicine service
  - Software as a medical device (SaMD)
  - Highly regulated
  - Production quality code

# Insights



# Curiosity and dedication

- Continuous learning
- Adaptability
- Driving force for my decisions





# Evolution of Goals

- Times change, priorities shift, and opportunities present themselves
- My goals have evolved significantly over time
- I “built” my path

# Work-life balance

- Boundaries
  - designated work hours and dedicated personal time
- Preventing Burnout



I'm deeply grateful for all my mentors and colleagues whose support has been instrumental throughout this journey



Yale University  
School of Medicine



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M Aydın Sav	
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Alp Dinçer	
Yavuz Oktay	
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Umut Toprak	
Erdal Coşgun	
Deniz Baycin Hızal	

Murat Günel	Leman Sencar
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Katsuhito Yasuno	S. Bulent Omay
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Chisom Izu	
Mickey Kim	
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