



JOHNS HOPKINS
M E D I C I N E

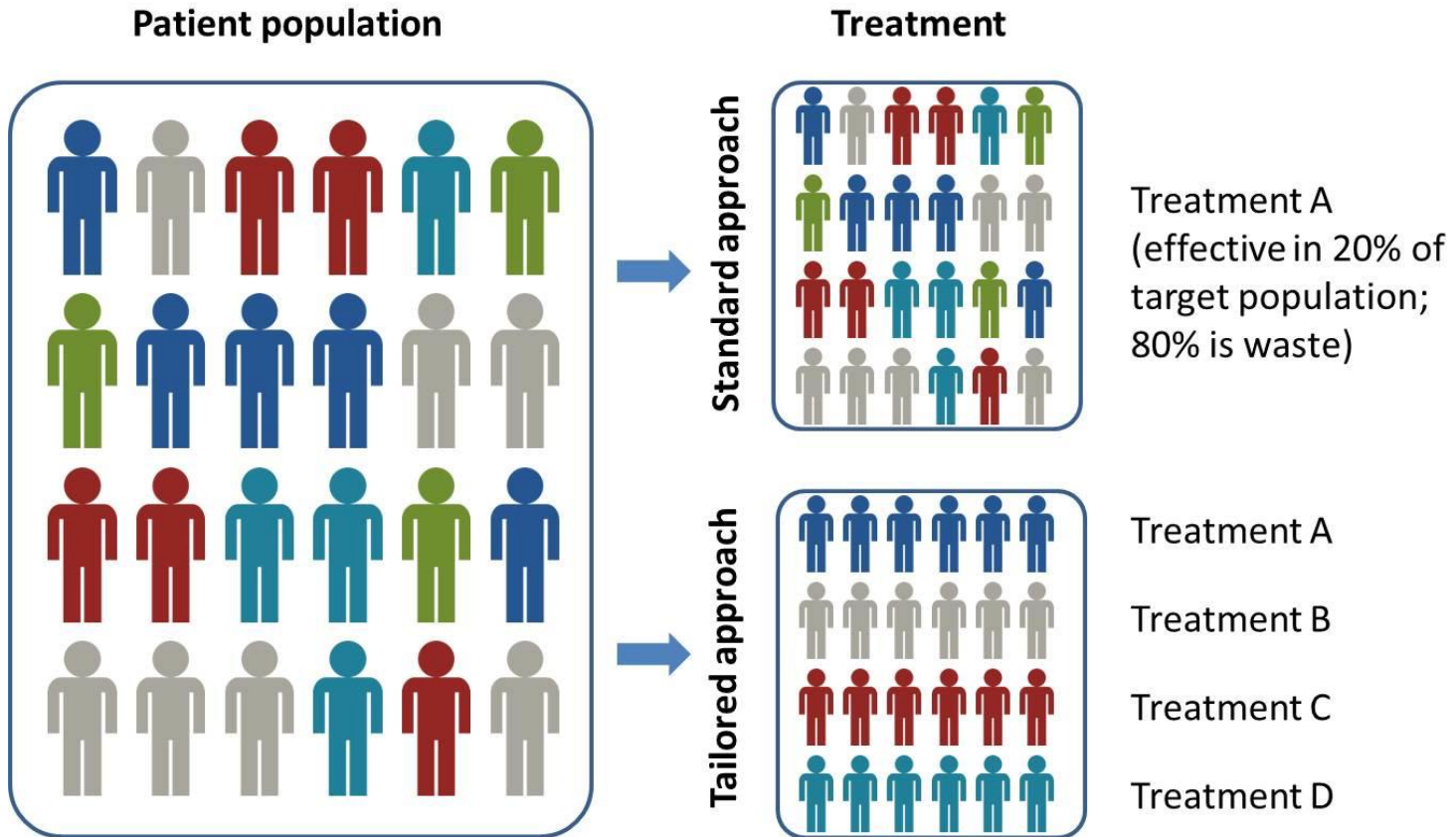
Delivering Precision Medicine for All 精密医療をすべての人に

Kenichi Oishi, MD, PhD

Radiology and Neurology, Johns Hopkins University School of Medicine

Precision Medicine

精密医療



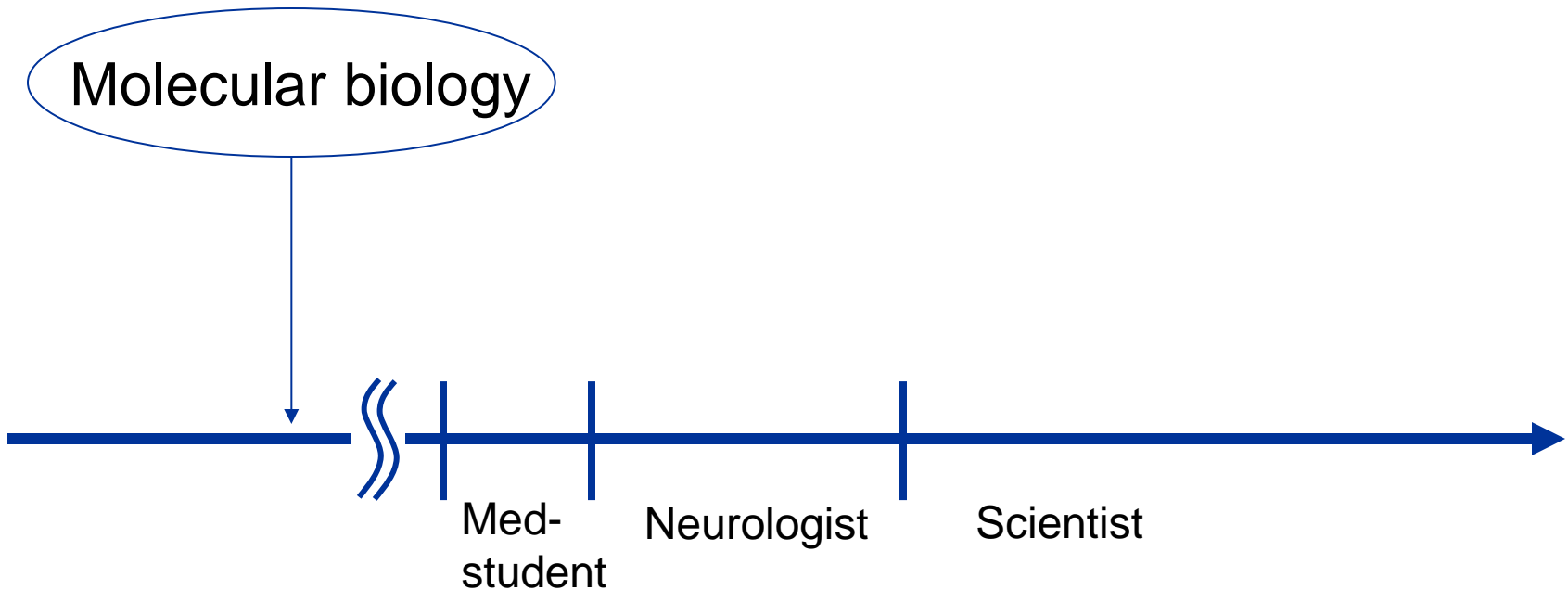
How does the human brain work?

脳の仕組みはどうなっている？



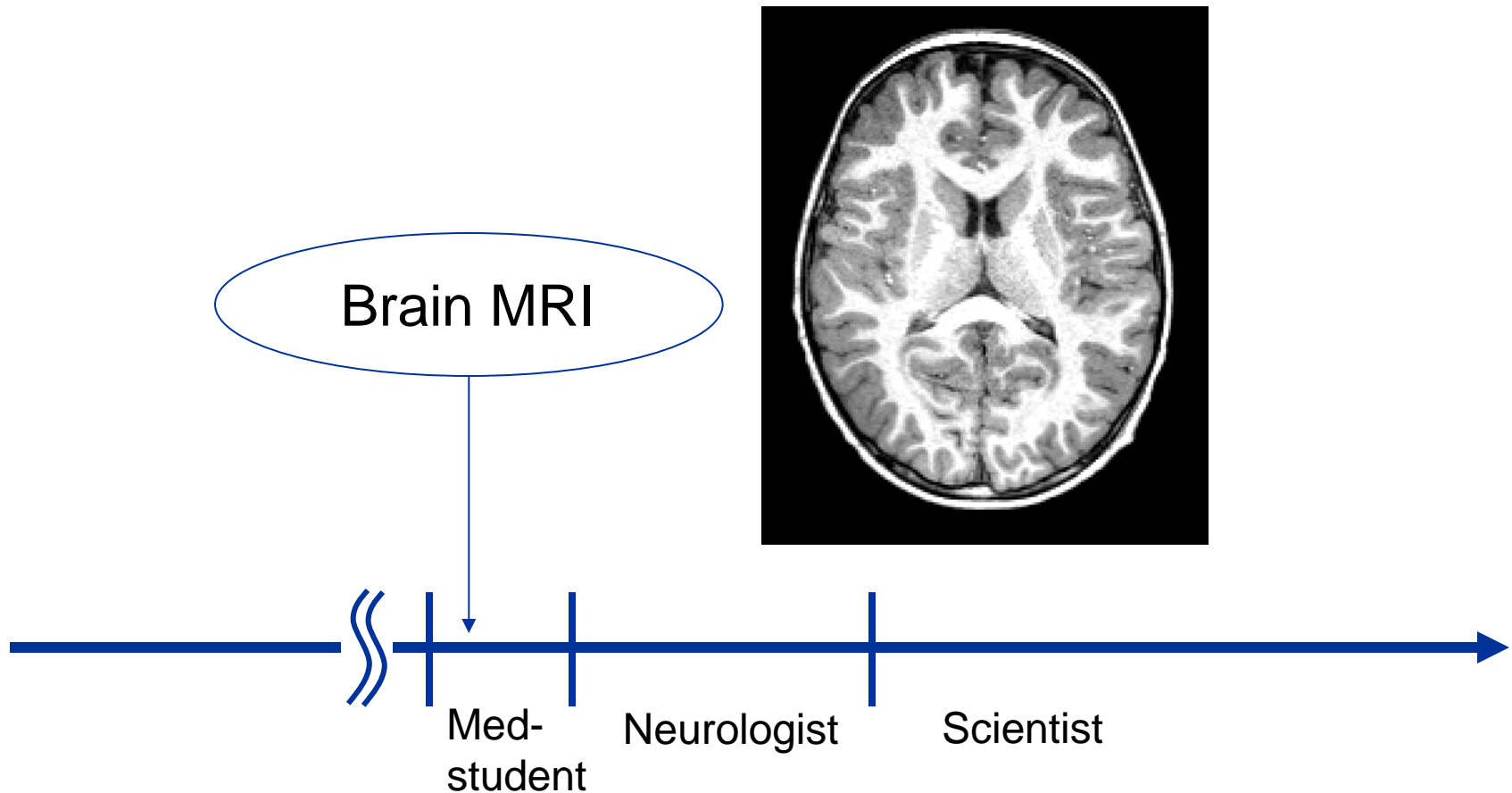
My History

私の履歴



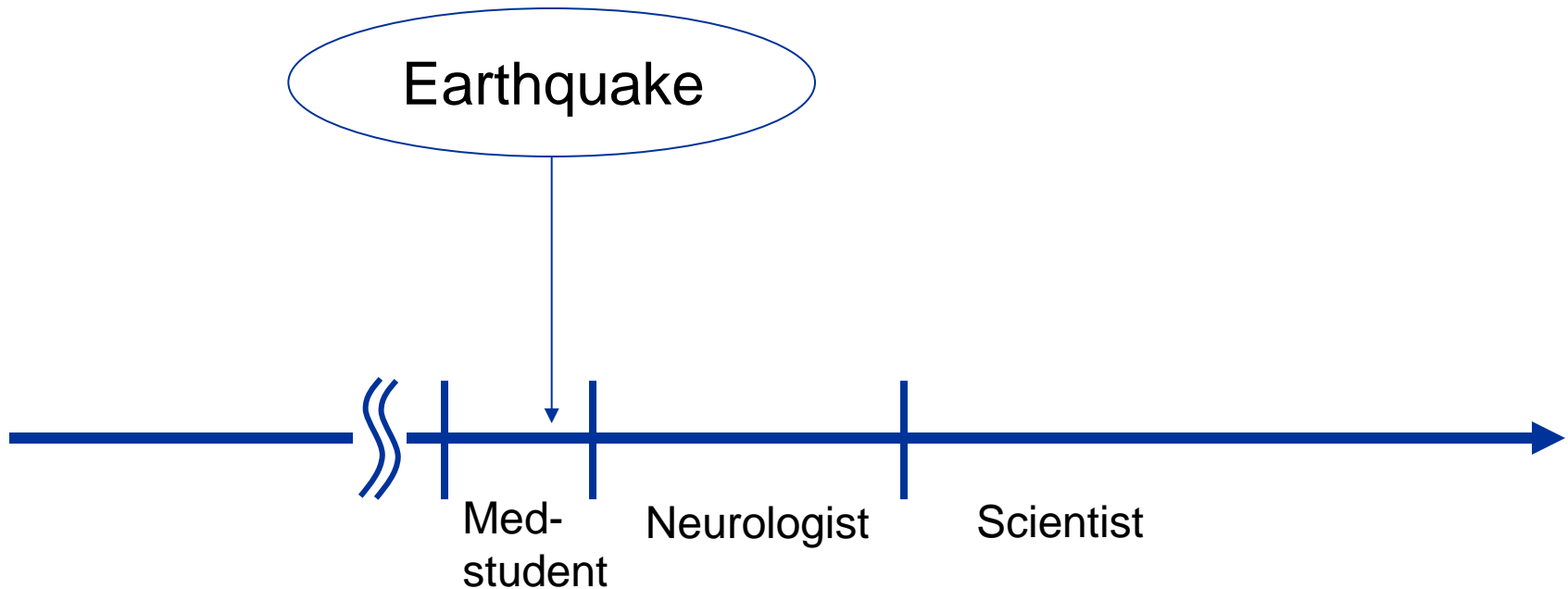
My History

私の履歴



My History

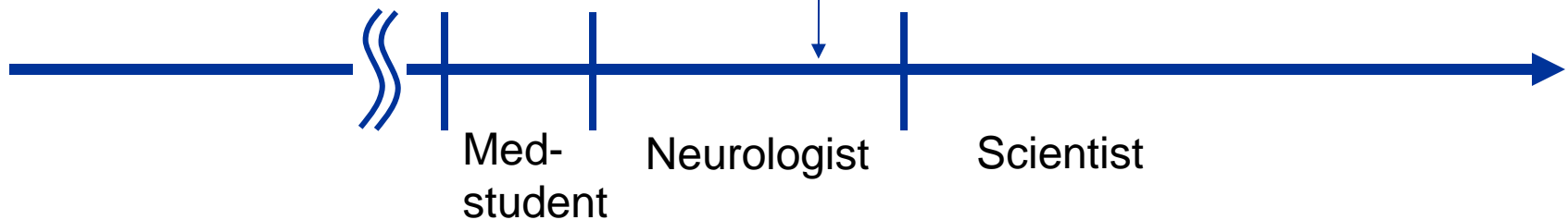
私の履歴



My History

私の履歴

I wish I had supernatural powers...



I wish I had supernatural powers

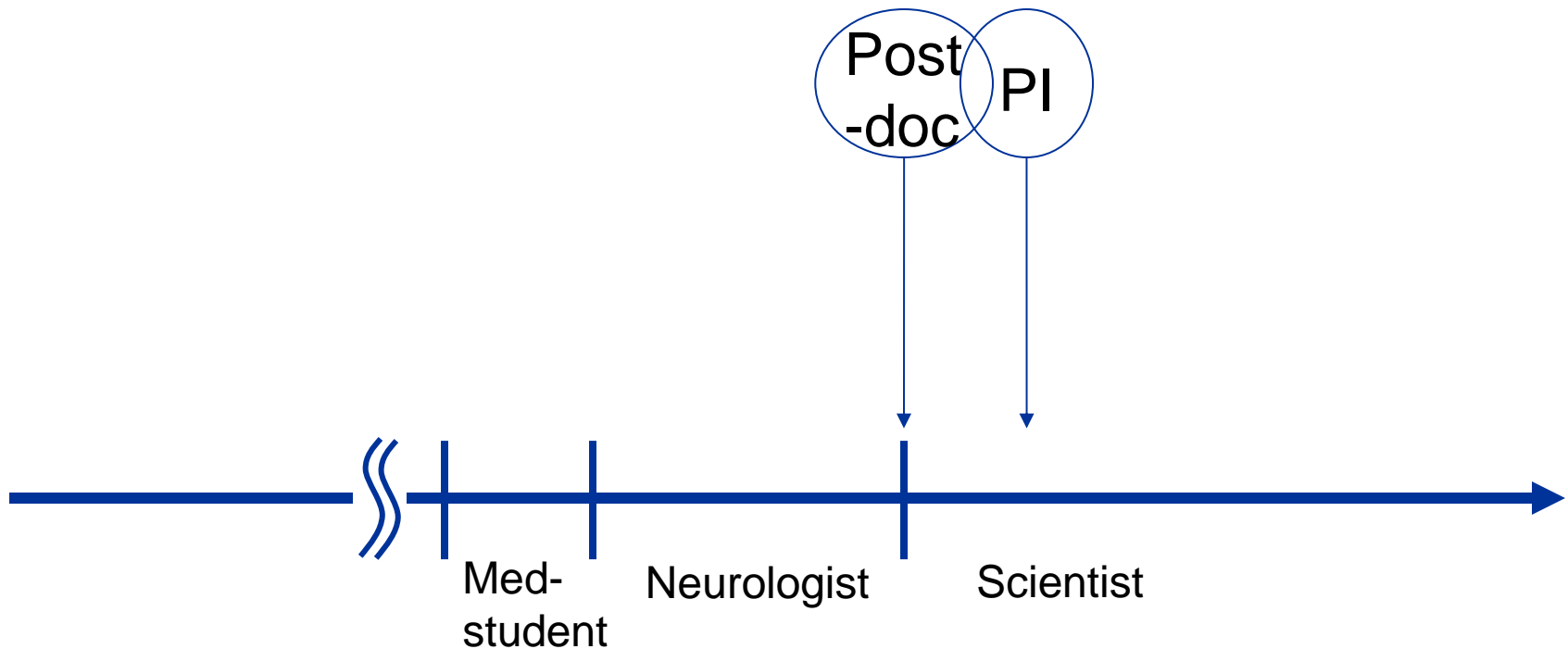


超能力があれば

- X-ray zoom vision
- Precognition

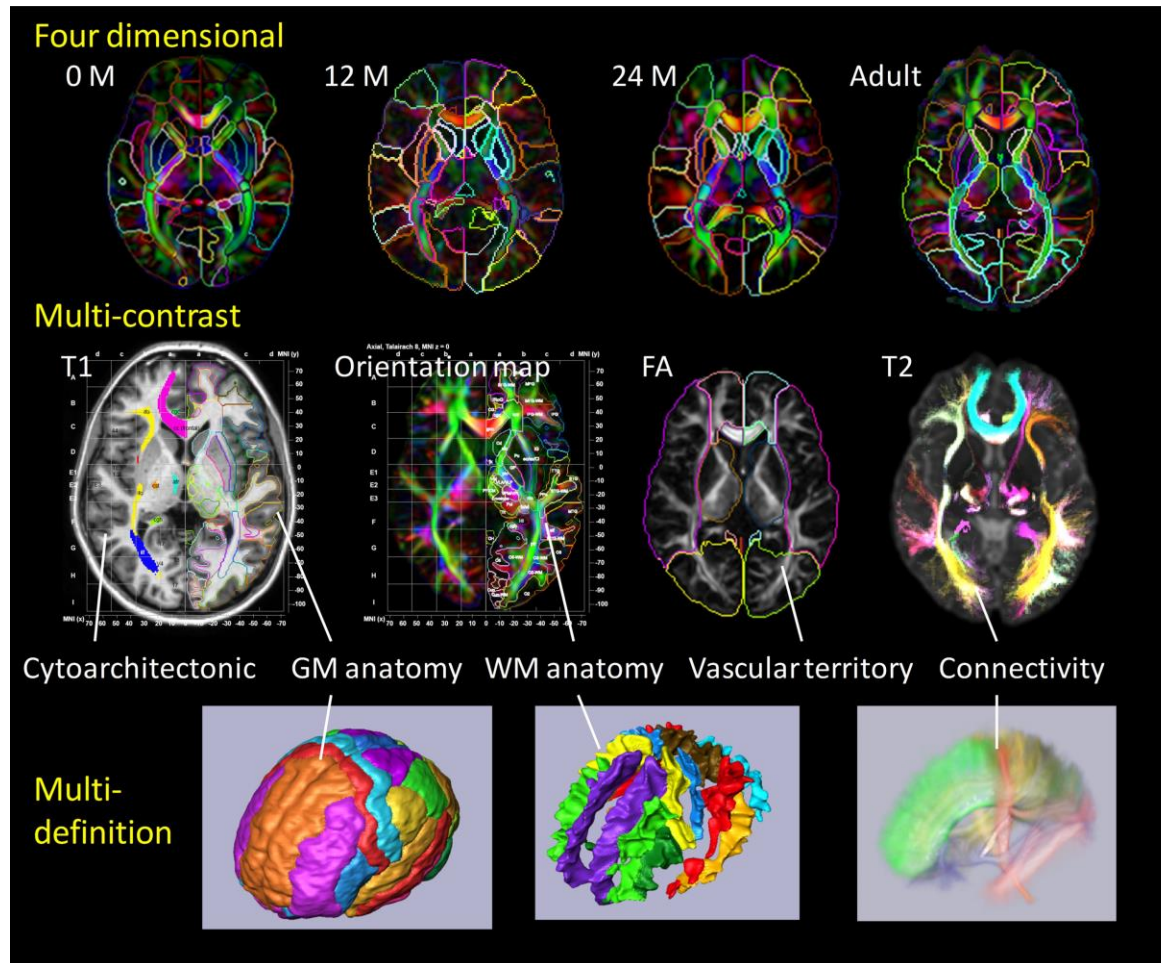
My History

私の履歴



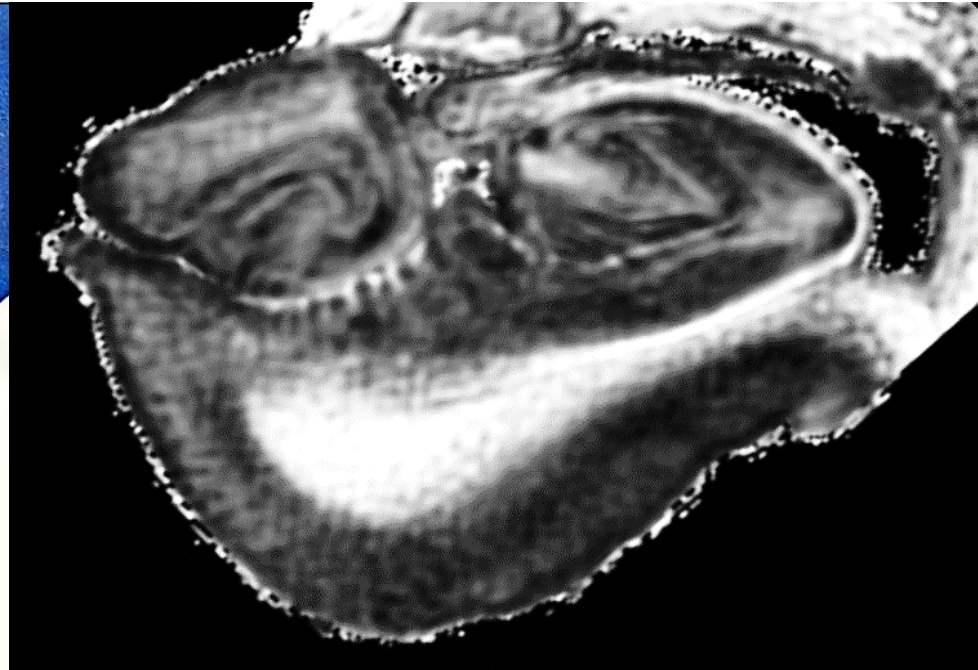
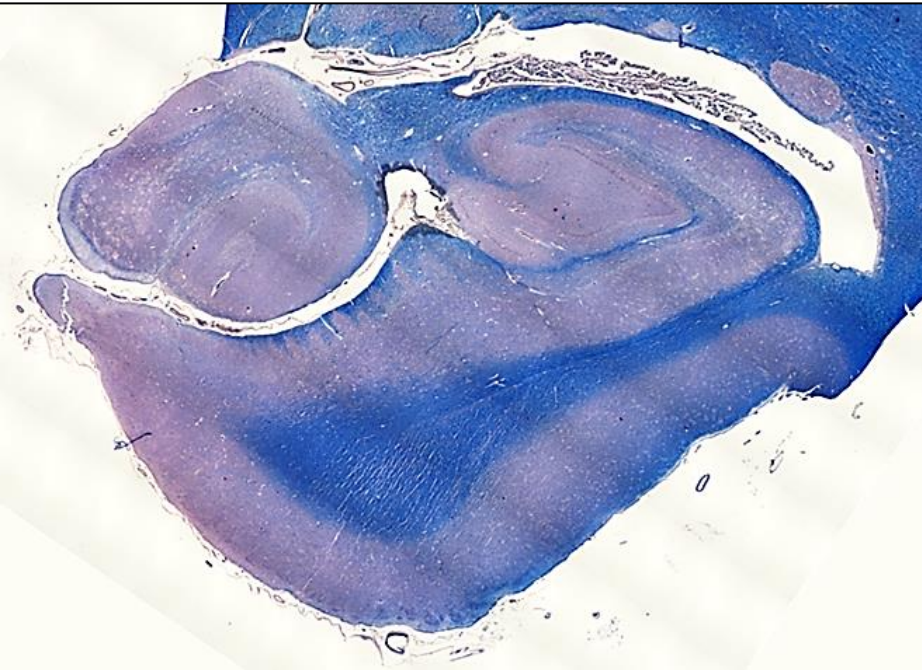
Brain mapping

脳マッピング



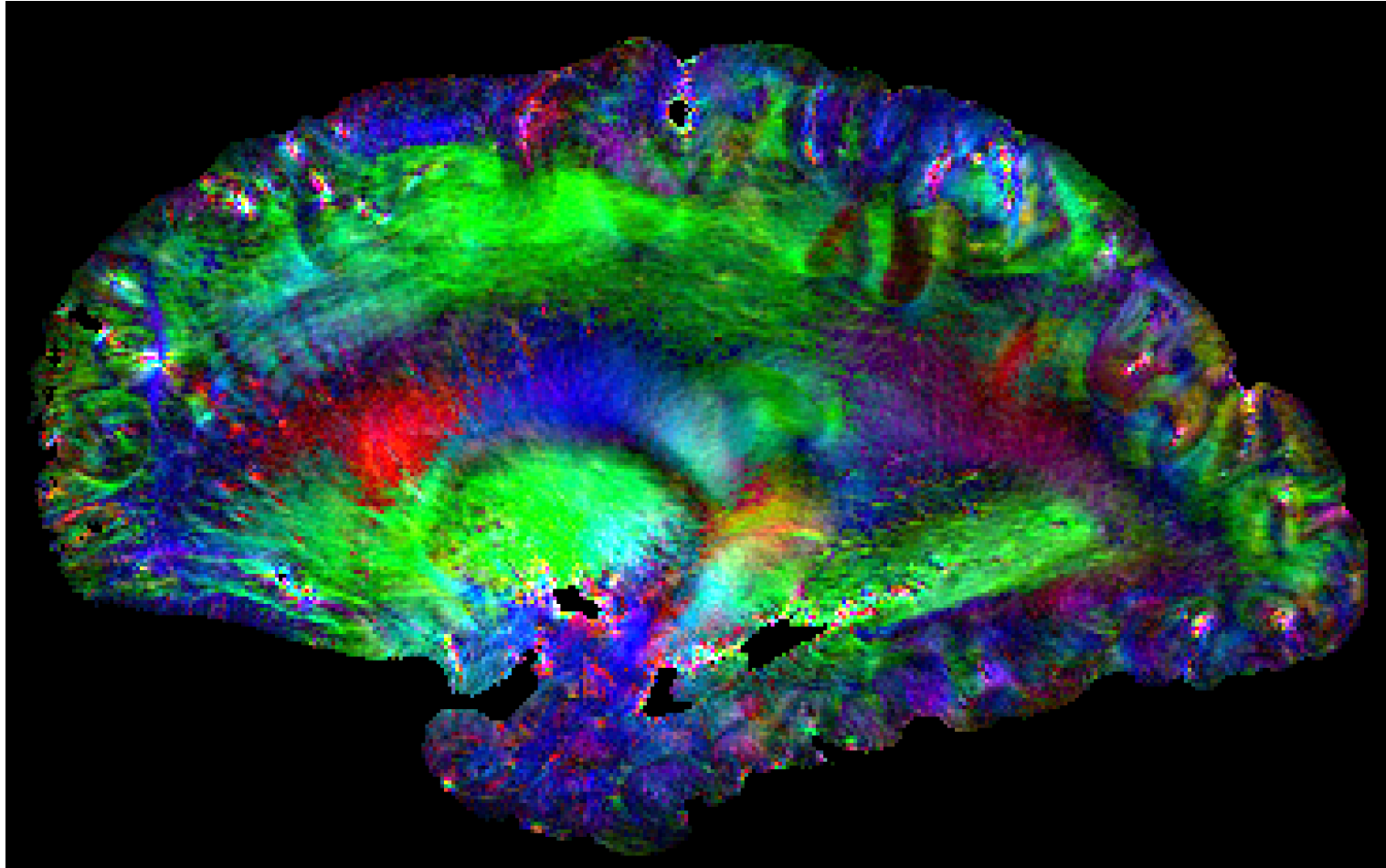
MR microscopy

磁氣共鳴顯微鏡

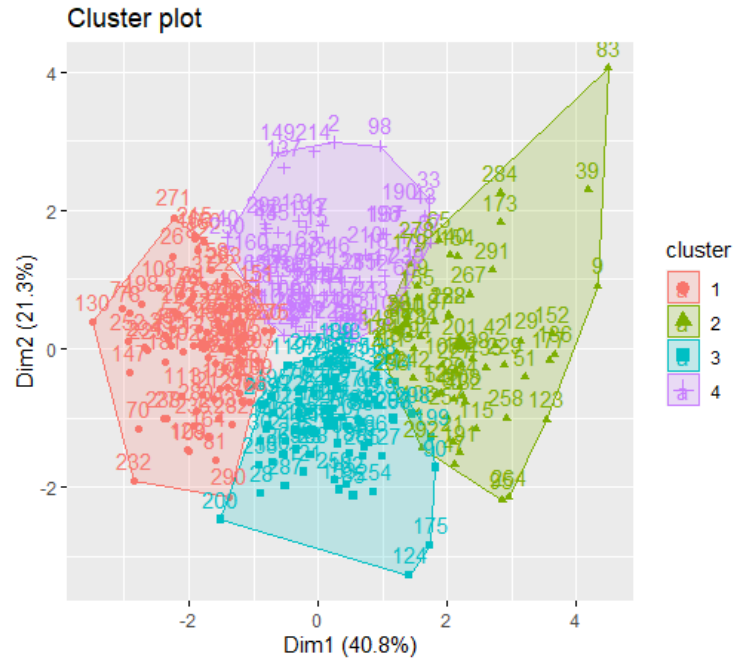
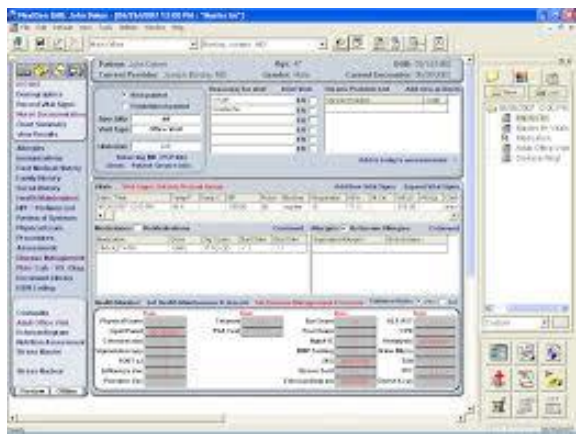
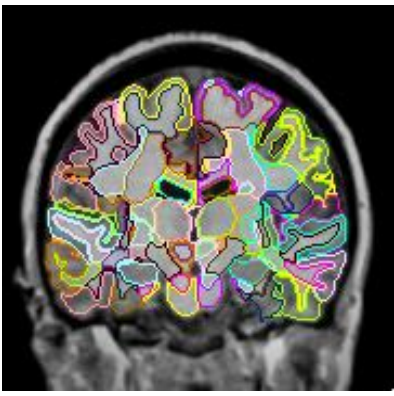


MR microscopy

磁氣共鳴顯微鏡

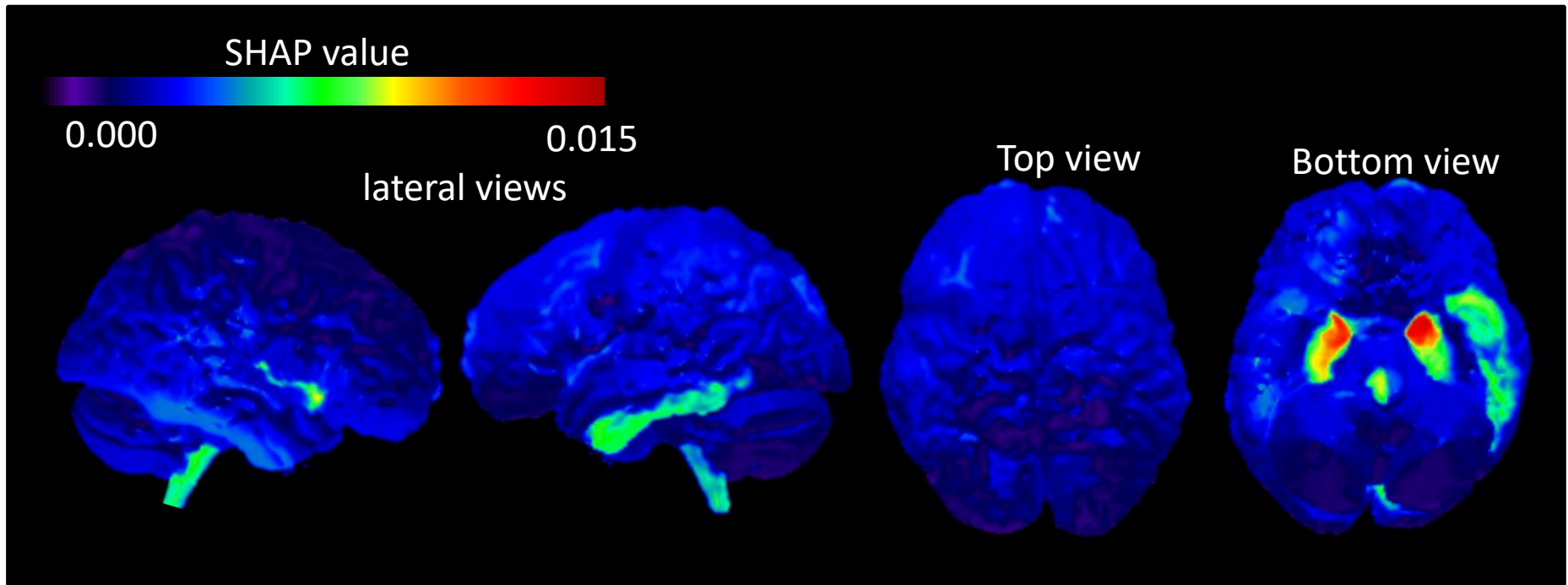


Real-world data analysis for precision medicine 精密医療のためのリアルワールドデータ解析



Prediction – Diagnosis

診断予測



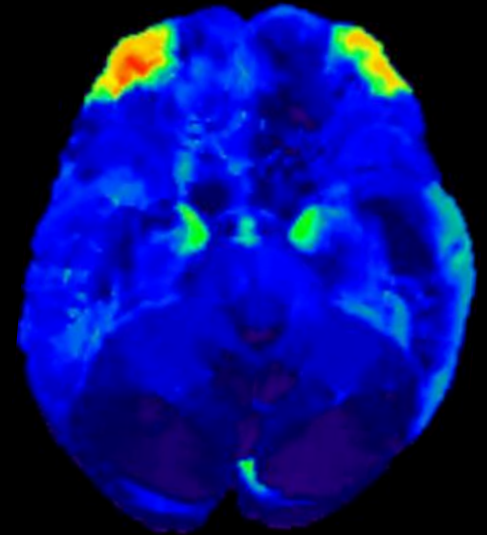
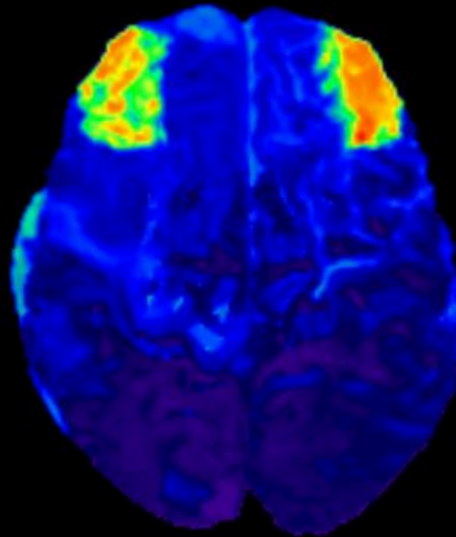
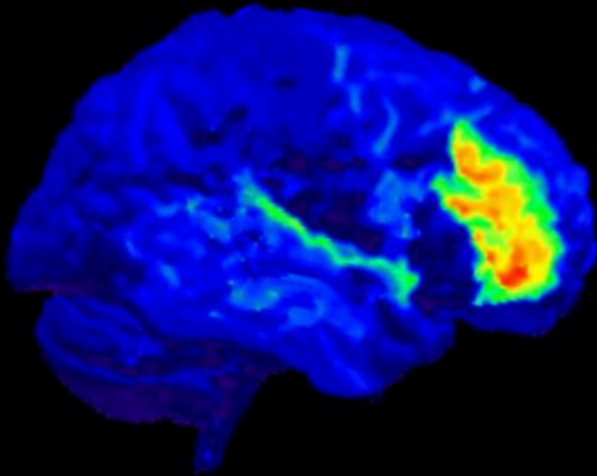
Prediction – Outcomes

病状進展予測

SHAP value

0.000

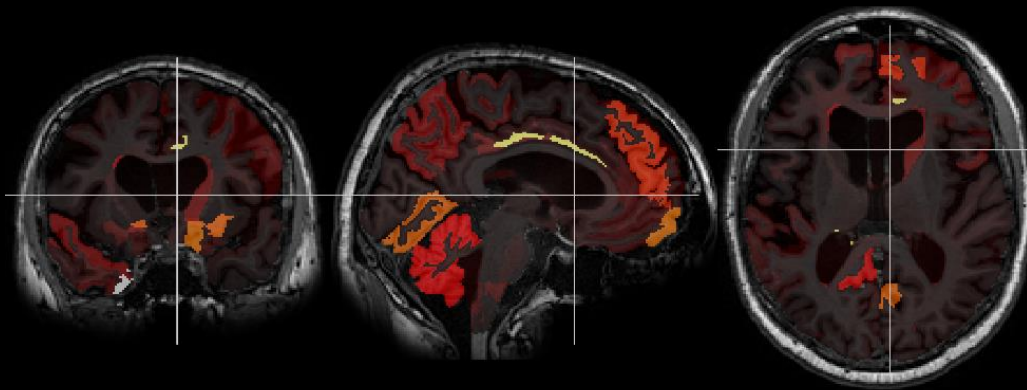
0.015



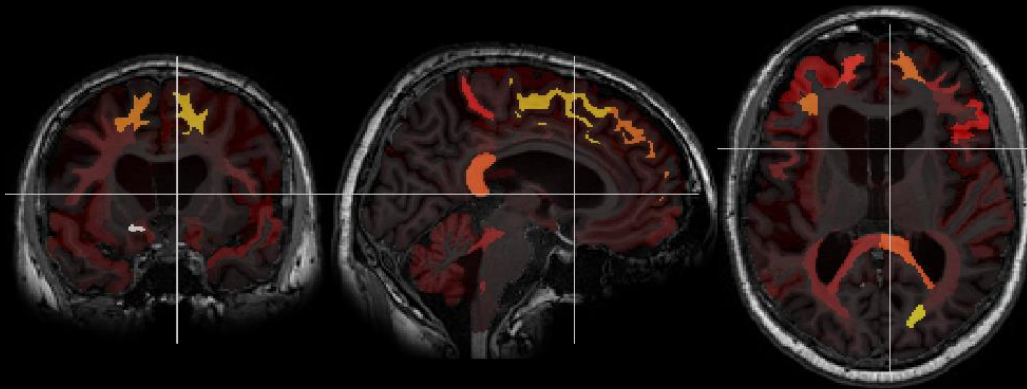
Prediction – Effectiveness

藥効予測

(A) SSRI



(B) CEI



Research Philosophy

研究哲学

Principle:

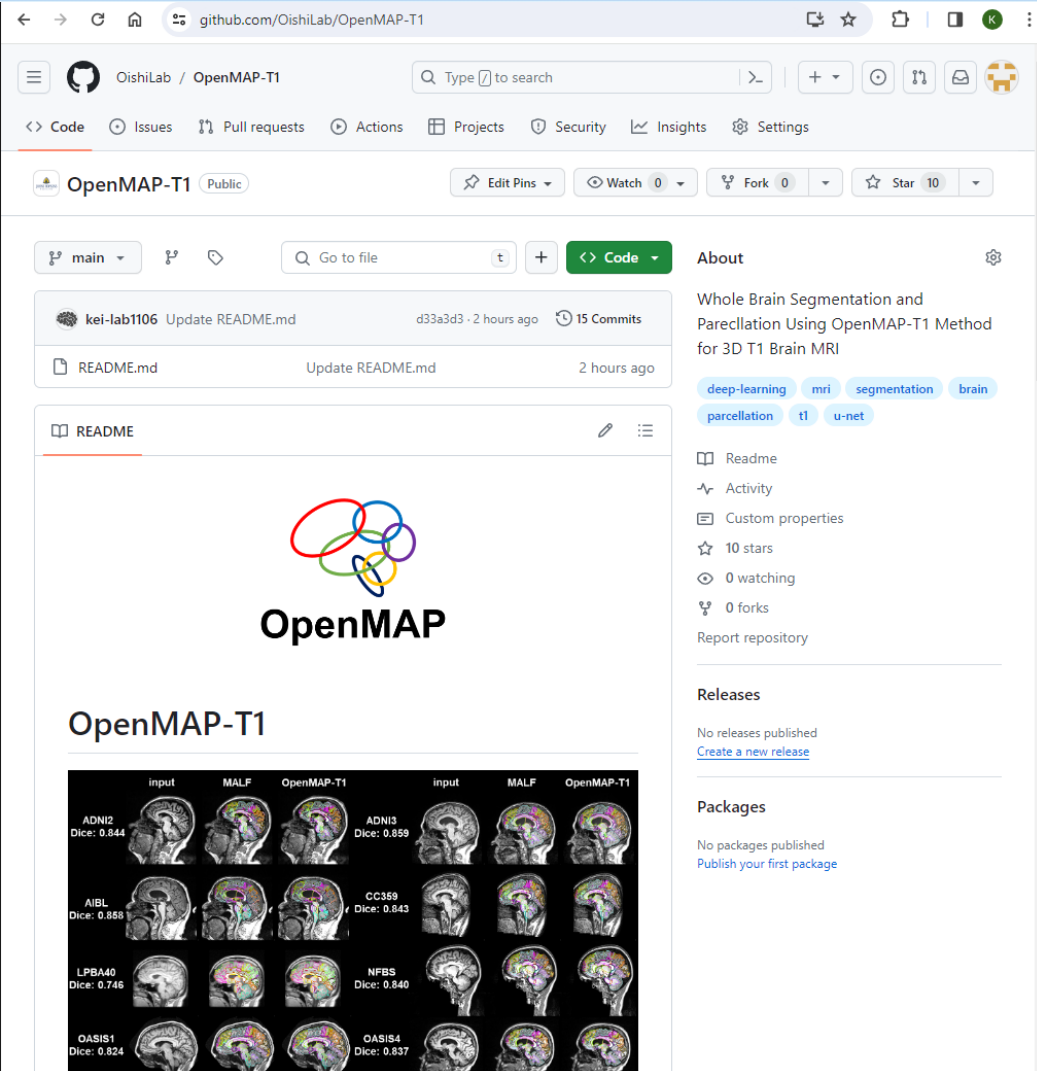
- Do what made you happy, avoid what hurt you

Core values:





















- Curiosity
- Collaboration
- Open

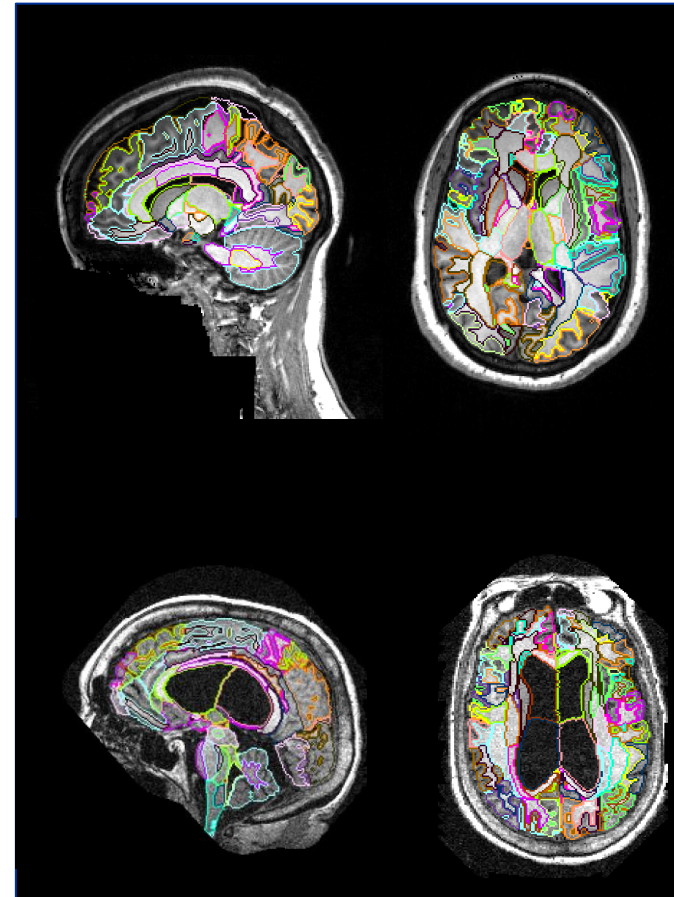
OpenMAP Suite

<https://github.com/OishiLab/OpenMAP-T1>



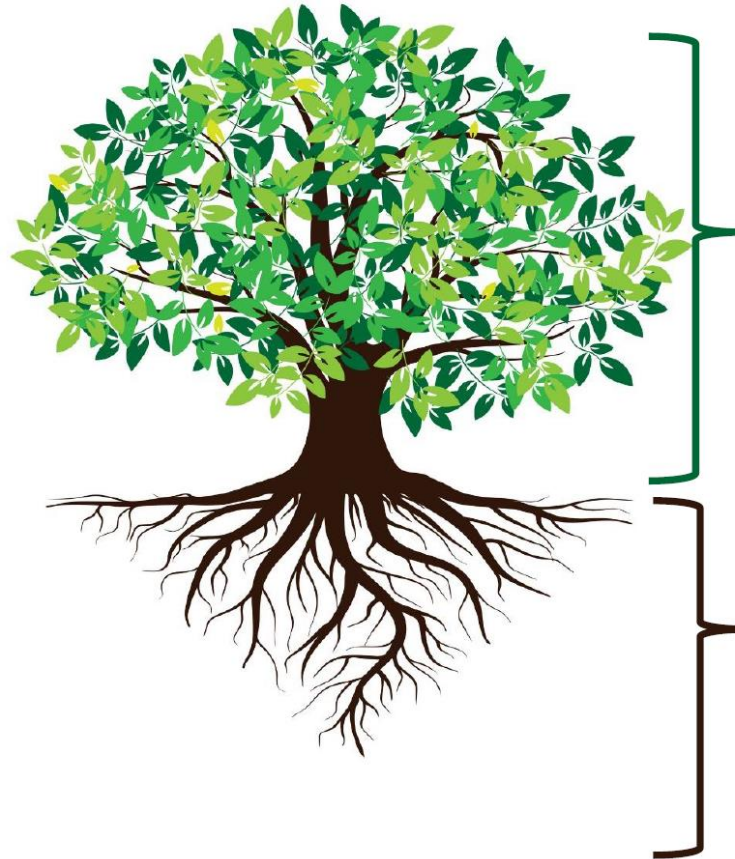
The screenshot shows the GitHub repository page for `OpenMAP-T1`. The repository is owned by `OishiLab` and is public. It has 10 stars and 0 forks. The repository description is "Whole Brain Segmentation and Parcellation Using OpenMAP-T1 Method for 3D T1 Brain MRI". The repository includes a README file, which is currently open. The README features the OpenMAP logo and a comparison table of segmentation results for various datasets.

	input	MALF	OpenMAP-T1	input	MALF	OpenMAP-T1
ADNI2 Dice: 0.844				ADNI3 Dice: 0.859		
AIBL Dice: 0.858				CC369 Dice: 0.843		
LPBA40 Dice: 0.746				NFBS Dice: 0.840		
OASIS1 Dice: 0.824				OASIS4 Dice: 0.837		



Reconsidering Research Capability

Foundation for Maturing
Research Capability and
Cultivating Pathways of
Co-Creation



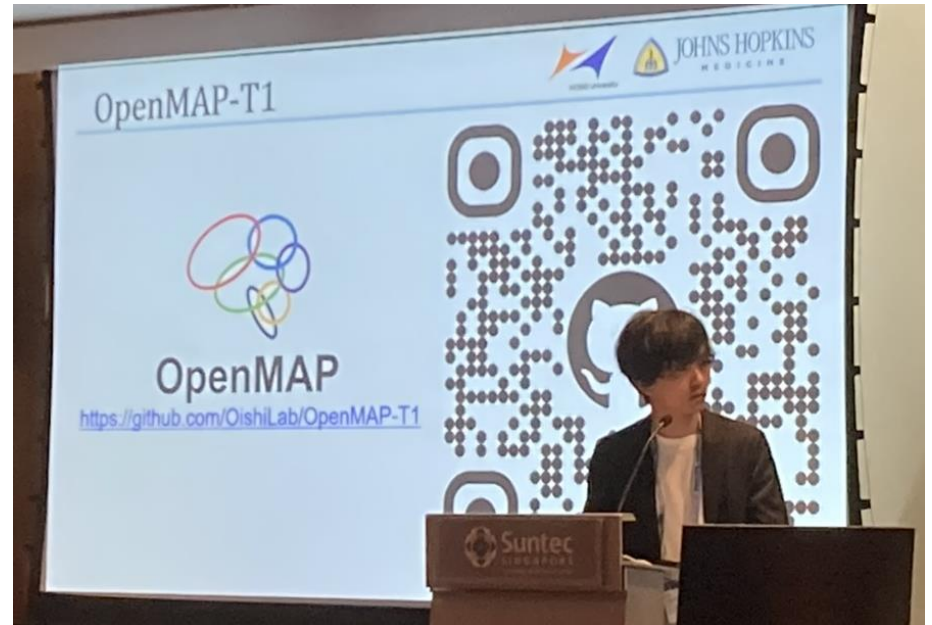
- Lab
- Division/Department
- Institute
- Federal

Lab-level: Diversity & Inclusiveness

研究室レベル: 多様性と包括性

- Members from different countries and backgrounds
- F: M = 1:1
- Various career stages, MD, PhD, MS, and students
- Maternal & Paternal leave
- Remote works & flexible workstyles
- Funding from multiple sources
- Scientific & Procedural mentors
- National & International collaborations

International conferences 国際学会



Foreign students 留学生



12/19/2024

Funding Supports

研究資金

- NIH
- Non-profit organizations
- Companies
- Philanthropy

Gates Ventures



Keck School of
Medicine of USC
**Alzheimer's Therapeutic
Research Institute**



KU ALZHEIMER'S DISEASE
RESEARCH CENTER
The University of Kansas Medical Center



Alzheimer's Disease Center



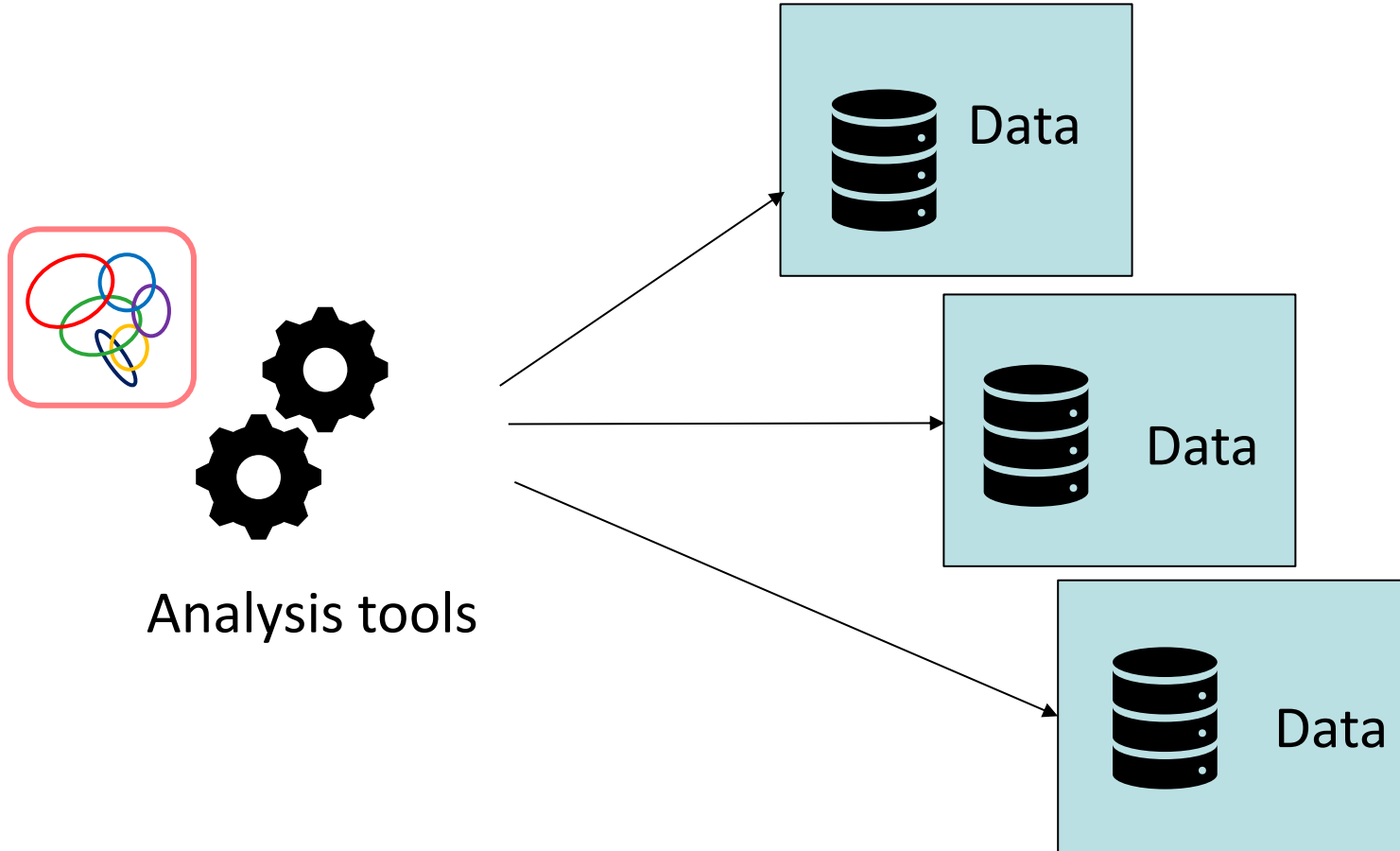
Goizueta Alzheimer's
Disease Research Center



[Learn more](#)

Federated Learning

連合学習



Division level: Distinguished Lecture Series

学部レベル: 卓越研究者講義



Retreat

ラボ合同小旅行



Institutional level: Precision Medicine Center of Excellence

施設レベル: 精密医療センター



- Neonate:
 - predicting future of the neonates with hypoxic-ischemic encephalopathy or preterm birth
- Aging:
 - predicting cognitive worsening
 - predicting response to therapies



NICU >

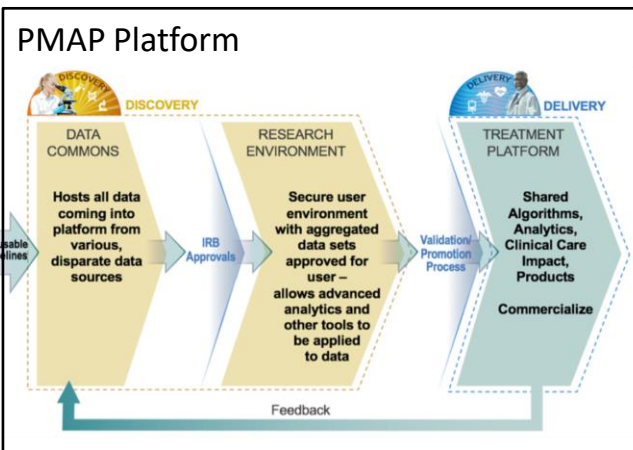
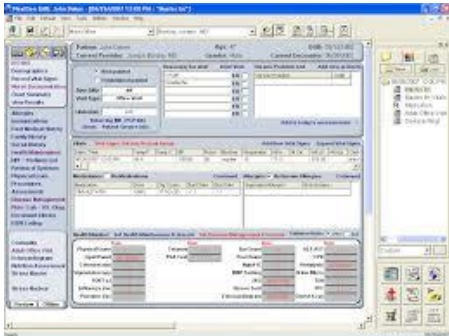
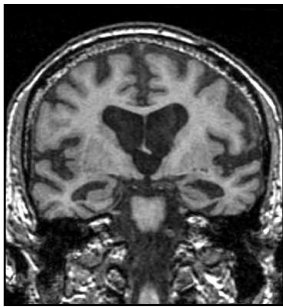


Alzheimer's Disease >

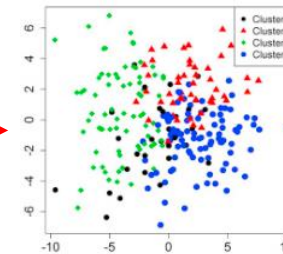


Precision Medicine Center of Excellence

精密医療センター

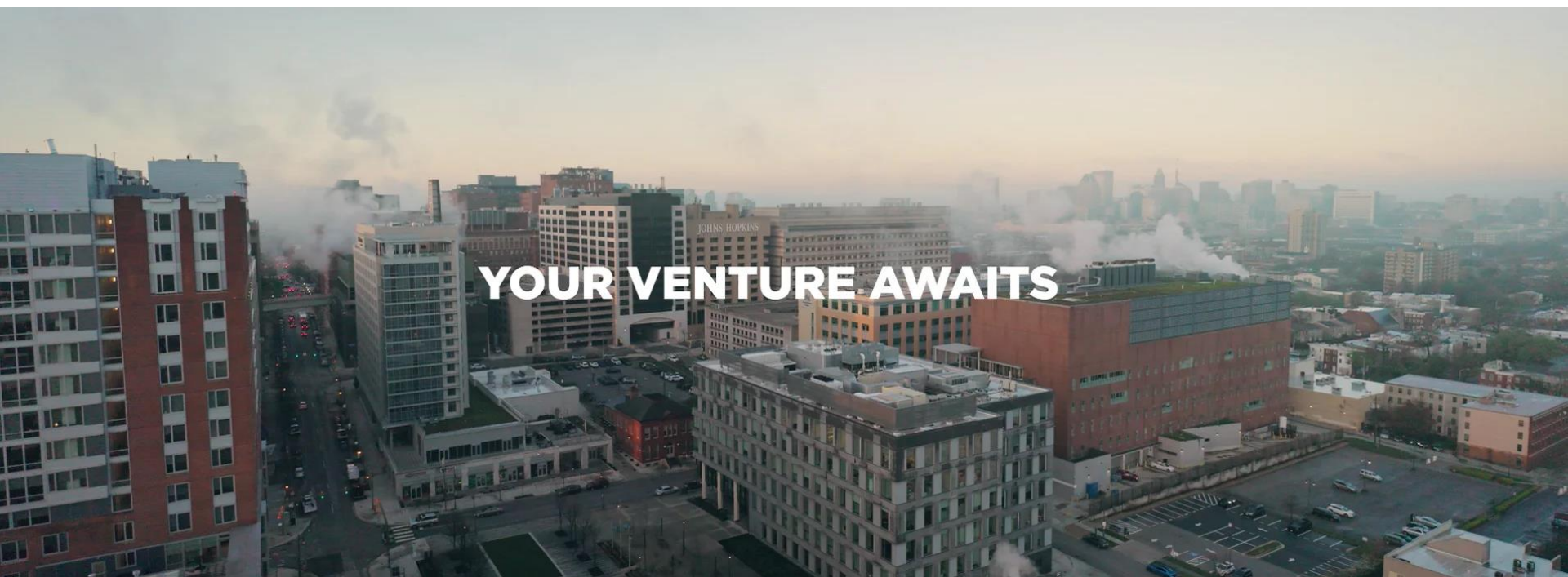


Predictive modeling



Johns Hopkins Technology Ventures

知財管理・投資家や企業と研究者を結ぶ



Federal level: Grants for underrepresented people and areas

連邦政府レベル:一極集中を防ぐための工夫



NIH

- Research Supplements to Promote Diversity in Health-Related Research
- Bridging the Gap Between Underrepresented Communities and Research Opportunities

NSF

- Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science
- Louis Stokes Alliances for Minority Participation
- Research in Underrepresented Institutions

Federal level: Grant Review



連邦政府レベル:再現性の高い成果を得るためのグラント審査

- Reviewers with various backgrounds
 - Carrier stages
 - Sex
 - Location & Institutes
 - Specialties
- COI

Current Issues

課題

- Long-term fundings
- Funding amounts
- Increasing salary
- International politics

Research over the next 20 years...

次の20年に向けて

- Vision
- Leadership
- International

