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Collaboratively building large neuroimaging datasets for Glioma research

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ESMRMB 2020 - September 30

Collaboratively building **large neuroimaging** **datasets** for Glioma research



ESMRMB 2020 ONLINE
SEPT. 30 - OCT. 2
CONVERGENCE SCIENCE & EDUCATION

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Gliomas research in Europe

- 50,000 primary gliomas / year in Europe
- Low incidence rate



>> Research studies of limited samples sizes

SCIENCE

A Waste of 1,000 Research Papers

Decades of early research on the genetics of depression were built on nonexistent foundations. How did that happen?

ED YONG MAY 17, 2019



SEAN NEL / SHUTTERSTOCK

In 1996, a group of European researchers found that a certain gene, called *SLC6A4*, might influence a person's risk of depression.

It was a blockbuster discovery at the time. The team found that a less active version of the gene was more common among 454 people who had mood disorders than in 570 who did not. In theory, anyone who had this particular gene variant could be at higher risk for depression, and that finding, they said, might help in diagnosing such disorders, assessing suicidal behavior, or even

(Ir)-Reproducibility

The New York Times

Many Facial-Recognition Systems Are Biased, Says U.S. Study

Algorithms falsely identified African-American and Asian faces 10 to 100 times more than Caucasian faces, researchers for the National Institute of Standards and Technology found.



Morning at Grand Central Terminal. Technology for facial recognition is frequently biased, a new study confirmed. Timothy A. Clary/Agence France-Presse — Getty Images

Lack of representativity

Why are middle-aged marathon runners faster than twentysomethings?

According to new data from the running app Strava, runners in their 40s are streets ahead of younger rivals



▲ 'Middle-aged runners outperform runners in the 20s ...' Photograph: FatCamera/Getty

According to data released by the running app Strava, middle-aged runners consistently average faster marathon times than their younger rivals, apparently defying the usual rules of athletic performance. Men in the 40-49 age bracket clock an average time of four hours and 17 minutes for a marathon, according to the recent figures. Women in the same age range typically come in at just under the five-hour mark.

Faster in their forties
than twenties?

Selection bias

Gliomas research in Europe

- 50,000 primary gliomas / year in Europe
 - Low incidence rate
- >> Research studies of limited samples sizes

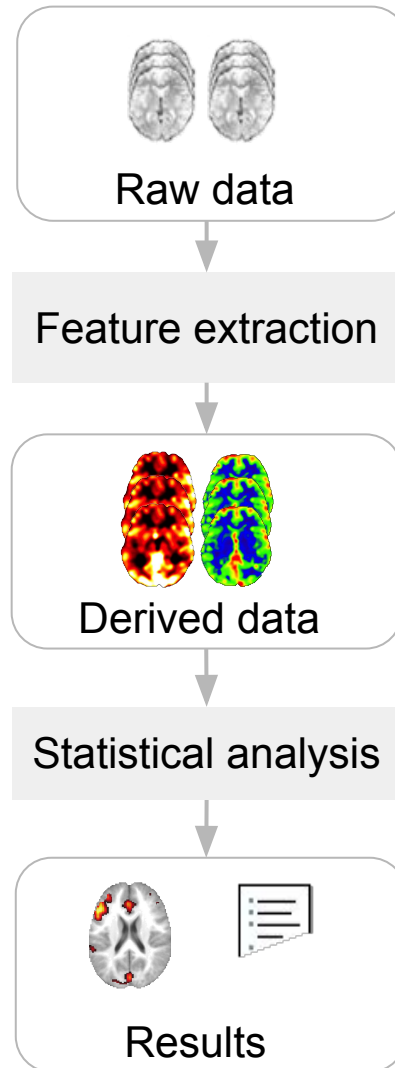


We need **bigger**, more **representative & diverse** samples

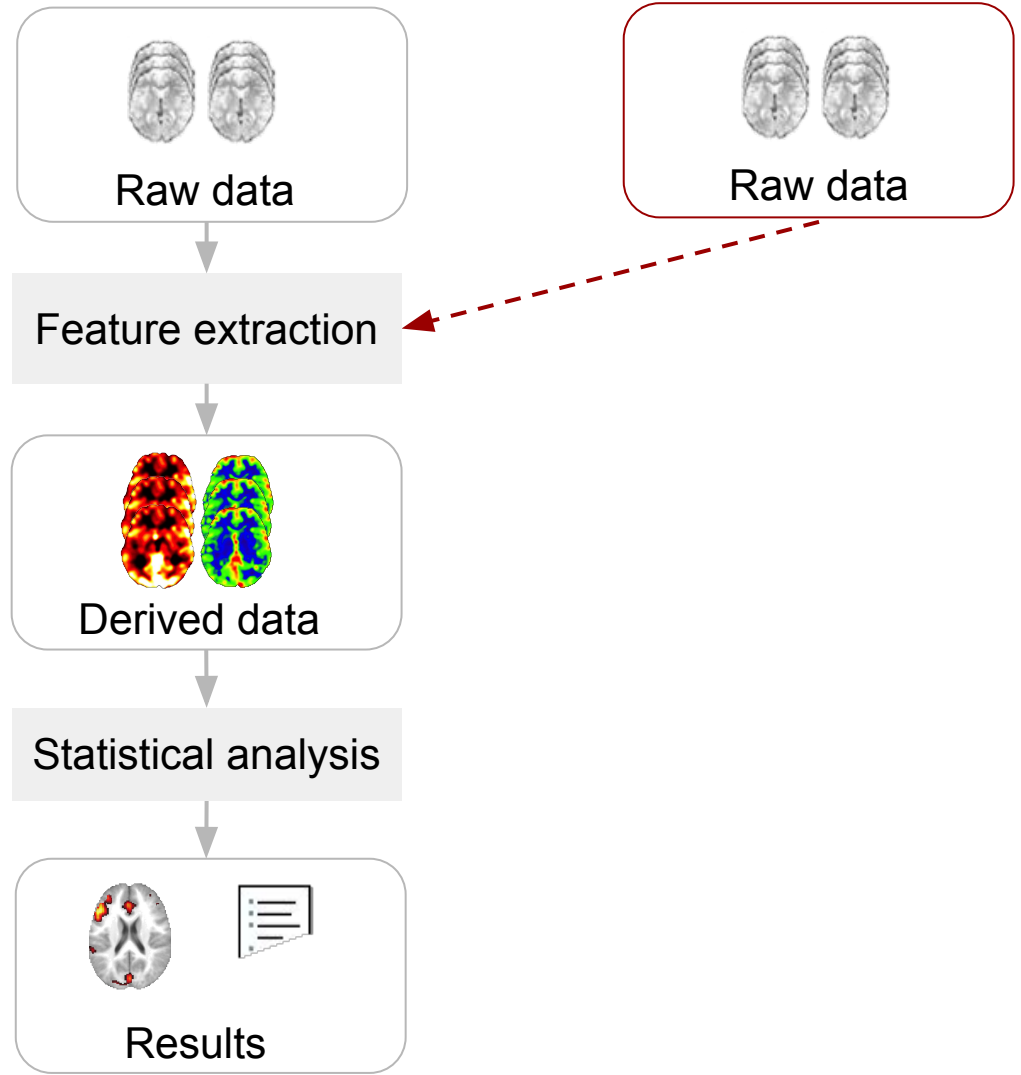


Data integration

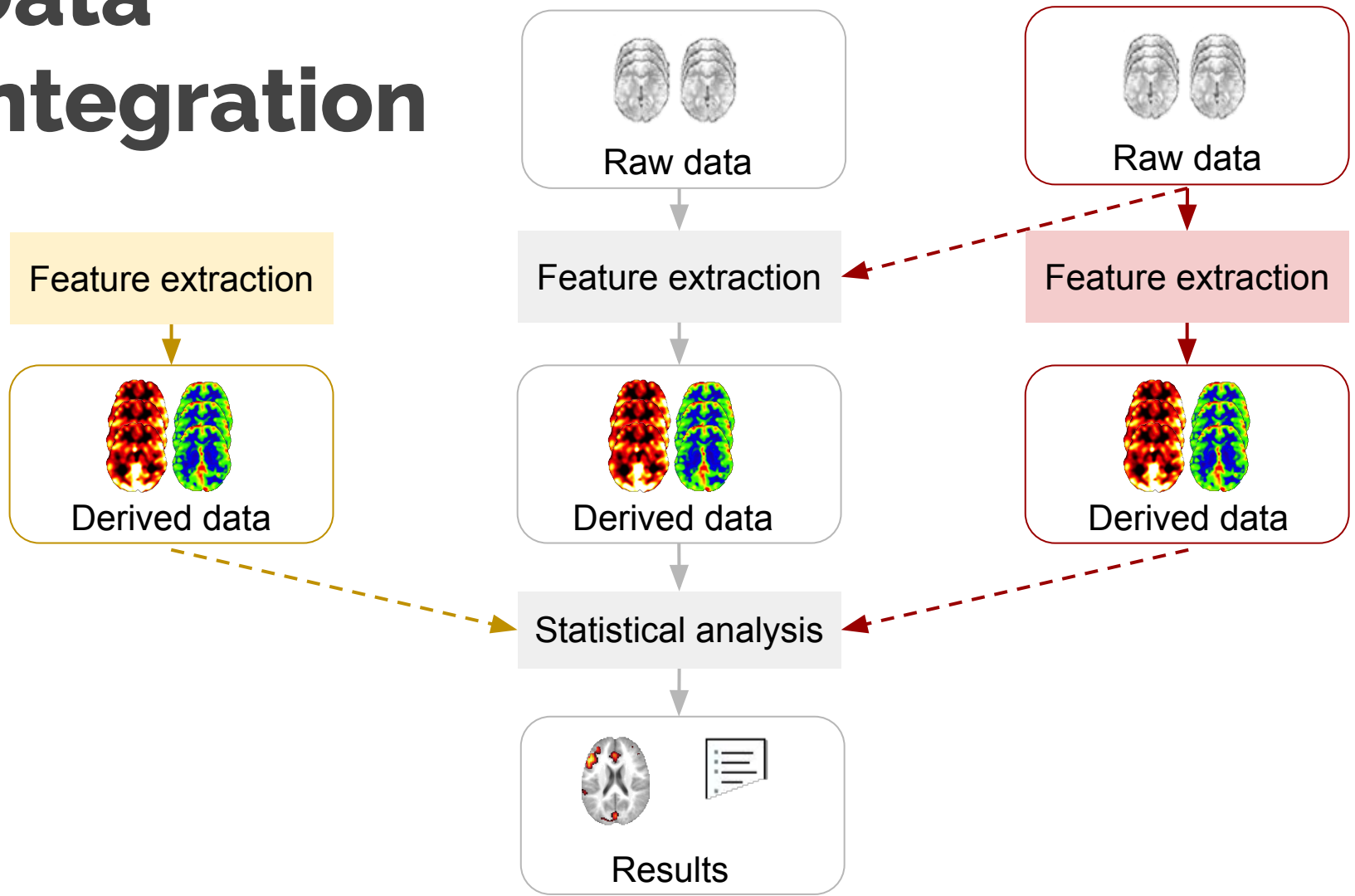
Data integration



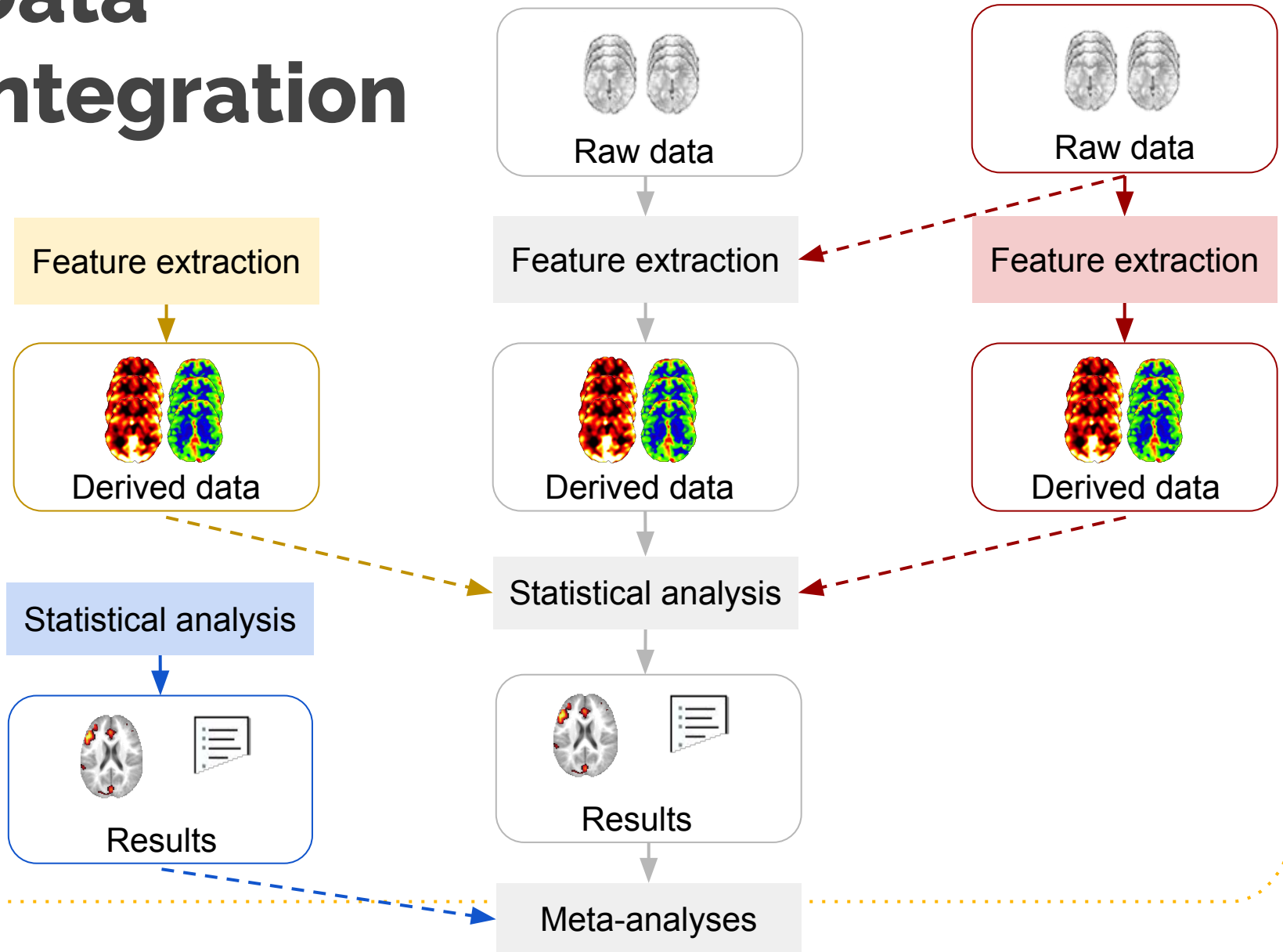
Data integration



Data integration



Data integration



GLiMR WG2

Multi-site data
integration



WG2 - Multi-site data integration

Working Group 2 coordinates multi-site data integration and enables the creation of large datasets in glioma diagnostics via the creation of common GDPR- and BIDS-compliant forms and data structures.



Camille
Maumet

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Data Privacy



Data infrastructure



Data portability

Data privacy



How to inform participants, collect consent for data sharing, and ensure de-identification of data and anonymity of metadata in accordance with GDPR?

- Review existing standards on data privacy

Open Brain Consent



Stephan Heunis



Yarik Halchenko

Translations

- [Bosnian](#)
- [Czech](#)
- [German](#)
- [Greek](#)
- [Spanish](#)
- [Finnish](#)
- [French](#)
- [Italian](#)
- [Dutch](#)
- [Norwegian](#)
- [Turkish](#)

The screenshot shows the Open Brain Consent website interface. At the top, there is a blue header with the text 'Open Brain Consent' and 'stable'. Below the header is a search bar. A navigation menu on the left lists various sections: 'Sample consent forms', 'Recommendations', 'Ultimate consent form', 'GDPR edition', 'Anonymization tools', 'Contribute', 'Contact information', and 'Discussions'. The main content area displays a document page with the title 'Make open data sharing a no-brainer for ethics committees.' and a 'Zenodo badge' link. The document content includes a 'Statement of the problem' section, which discusses the challenges of data sharing in neuroimaging research, such as the lack of a common consent template and the need for explicit instructions on data sharing.

Data infrastructure

Which tools and databases are available and how to use them to automate multi-site integration?



- Review existing data sharing infrastructure (in Europe)

Collaboration with **ENBIT**



Daniele
Marinazzo



Cyril
Pernet

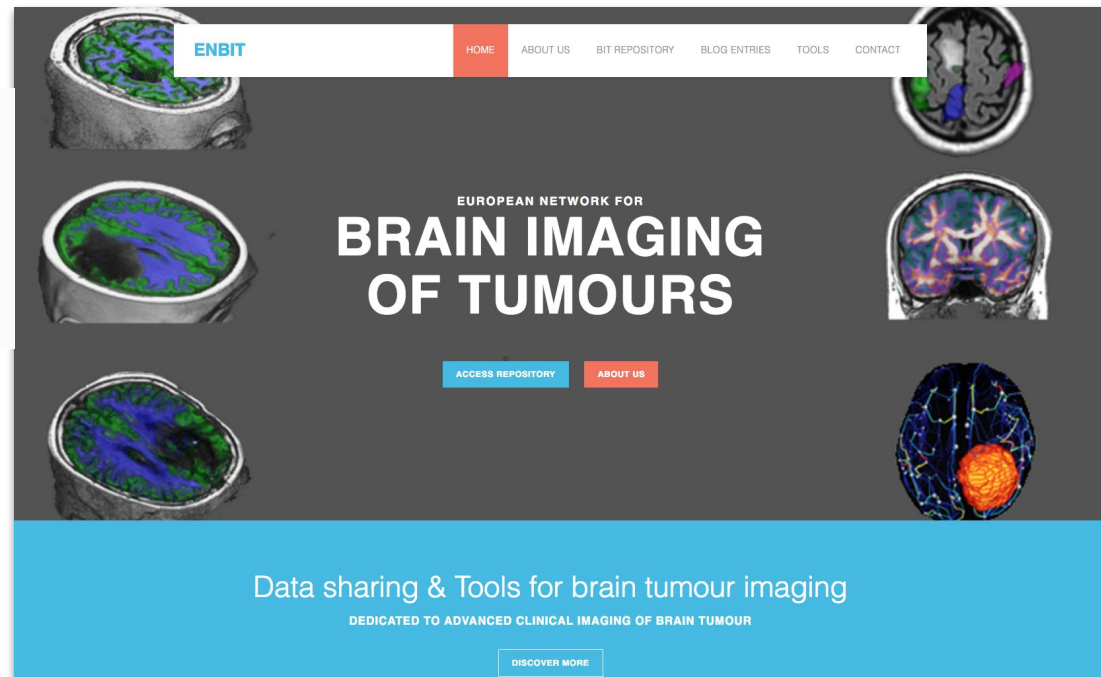


Image credits: "Transport map"

<https://en-brain-imaging-of-tumours.github.io/website/>

Data portability

How differences in acquisition parameters can be conveyed with enough details to support future post-processing?

- **Extend the international BIDS standard** in setting up the structures for sharing advanced MR imaging data.



Brain Imaging Data Structure (BIDS):

A global community of 200+ members!



Guiomar
Niso



Melanie
Ganz



Robert
Oostenveld



Russ
Poldrack



Kirstie
Whitaker

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Join GliMR Working Group 2!

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Thank you!



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Credit: Presentation template by [SlidesCarnival](#), adapted

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