

# The R-fMRI Maps Project

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## The R-fMRI Maps Project

**Deconstructed, parsed, and diagnosed.**  
 A hypothetical example illustrates how precision medicine might deconstruct traditional symptom-based categories. Patients with a range of mood disorders are studied across several analytical platforms to parse current heterogeneous syndromes into homogeneous clusters.

Insel and Cuthbert 2015. Science

## Biotypes in Depression

Drysdale et al., 2016. Nat Med

## The R-fMRI Maps Project

The R-fMRI Maps Project

中科院心理所高性能计算集群

## The R-fMRI Maps Project

已共享**4770**名被试数据，包括：

1. Amplitude of low frequency fluctuations (ALFF)
2. Fractional ALFF (fALFF)
3. Regional Homogeneity (ReHo)
4. Voxel-mirrored homotopic connectivity (VMHC)
5. Degree Centrality (DC)
6. 功能连接矩阵
  - a. Automated Anatomical Labeling (AAL) atlas
  - b. Harvard-Oxford atlas
  - c. Craddock's clustering 200 ROIs
  - d. Zalesky's random parcellations
  - e. Dosenbach's 160 functional ROIs

此外，也共享灰质(GM)、白质(WM)和脑脊液(CSF)密度与体积图像。

已有593名研究者下载

## Outline

- ➔ • Data Preparation
- Standardized Preprocessing
- Quality Control
- Data Upload

### Data Organization

ProcessingDemoData.zip

- FunRaw
  - Sub\_001
  - Sub\_002
  - Sub\_003
- T1Raw
  - Sub\_001
  - Sub\_002
  - Sub\_003

<http://rfmri.org/DemoData>

### Data Organization

ProcessingDemoData.zip

- FunImg
  - Sub\_001
  - Sub\_002
  - Sub\_003
- T1Img
  - Sub\_001
  - Sub\_002
  - Sub\_003

DPABI Utilities

- DICOM Sorter
- Image Calculator
- Image Reslicer

DICOM Sorter

Suffix: IMA

Output: SubjectID/SessionName

Output Dir: A:\ershuo-ganyen\Desktop

Anonymize DICOM files

### Data preparation

Arrange each subject's fMRI DICOM images in one directory, and then put them in "FunRaw" directory under the working directory.

Subjects **SUB** DICOM files directory, please name as this Working directory

### Data preparation

Arrange each subject's T1 DICOM images in one directory, and then put them in "T1Raw" directory under the working directory.

Subjects **SUB** DICOM files directory, please name as this Working directory

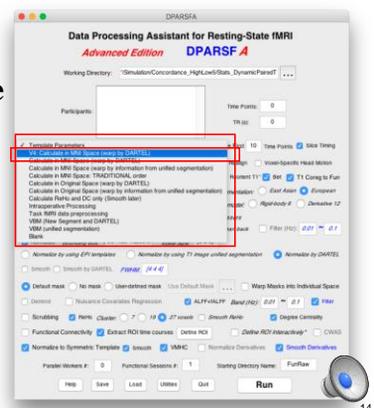
## Outline

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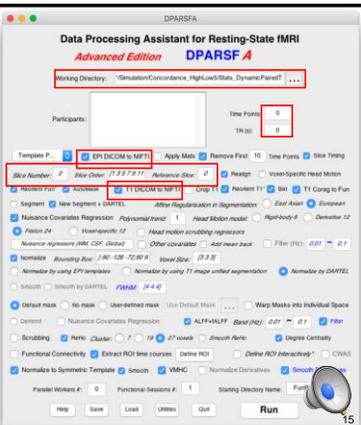
## Resting State fMRI Data Processing

Template Parameters



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## Preprocessing and R-fMRI measures Calculation



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## Preprocessing and R-fMRI measures Calculation



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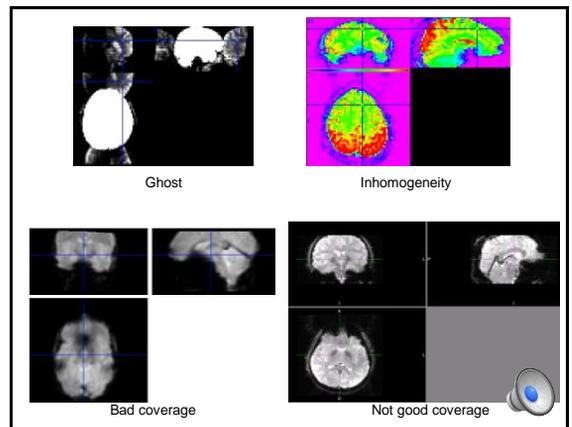
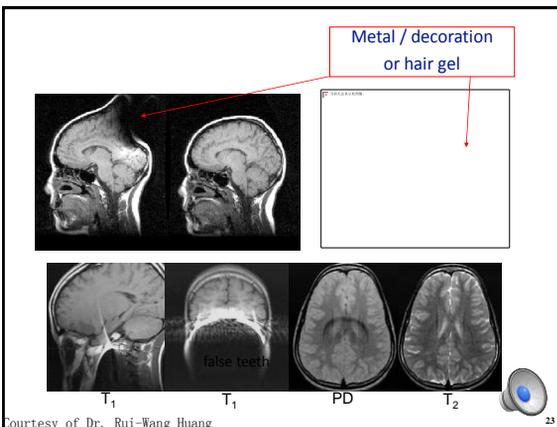
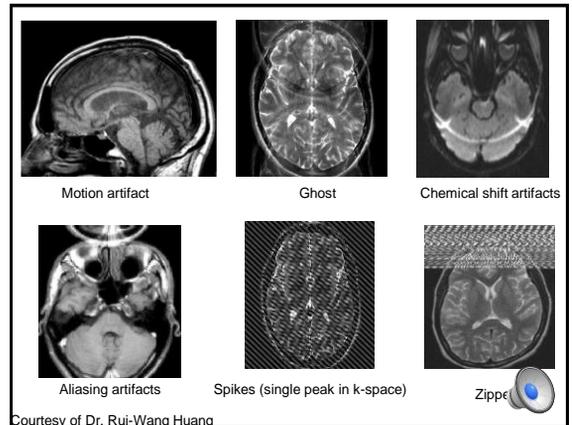
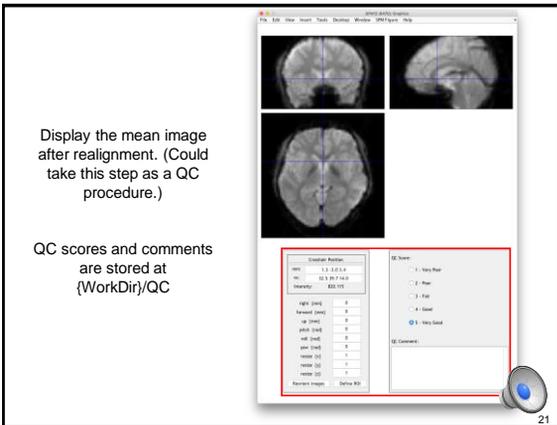
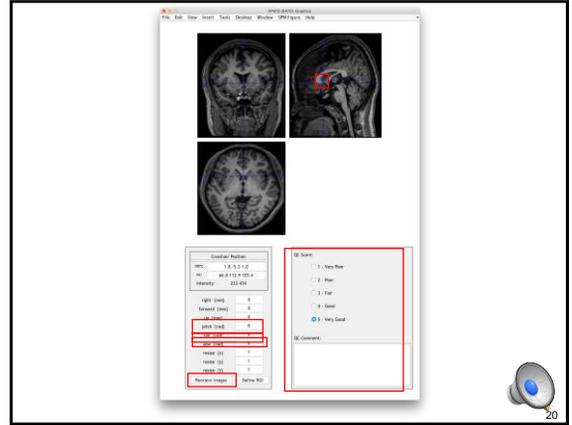
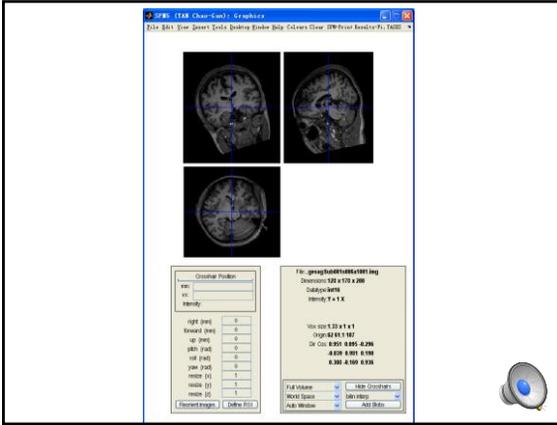


## Preprocessing and R-fMRI measures Calculation

Reorient Interactively  
This step could improve the accuracy in registration, segmentation and normalization, especially when images had a bad initial orientation. Also can take as a QC



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### Quality Control

- DPARSFA\_Setting2.mat
- DPARSFA\_Setting3.mat
- Funimg
- FunimgA
- FunimgAR
- FunimgARW
- FunimgARWS
- FunimgARWSF
- FunRaw
- Masks
- PicturesForC...rmalization
- QC

	A	B	C	D
1	Subject ID	QC Score	QC Comment	
2	Sub_001		5 Very Good!	
3				

### Quality Control

### Quality Control

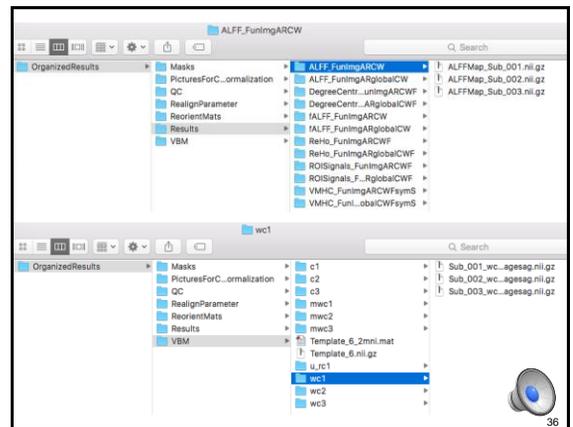
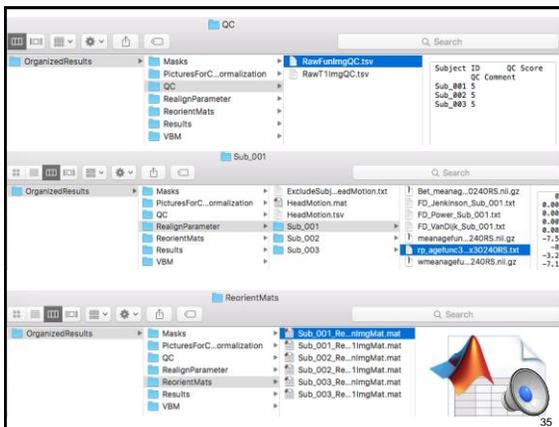
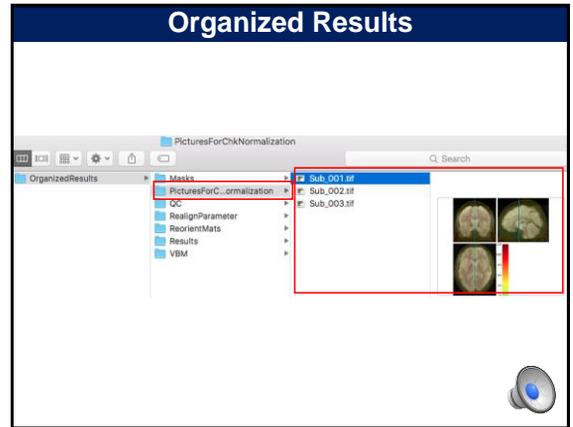
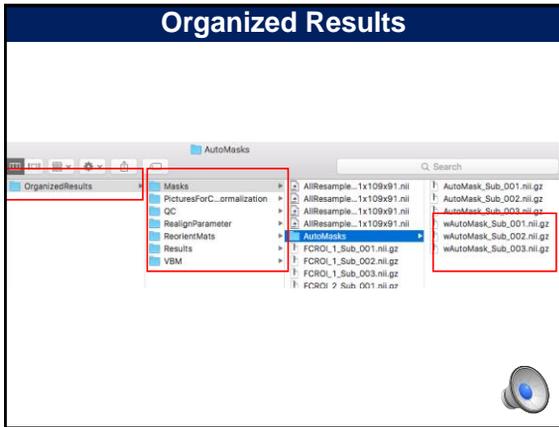
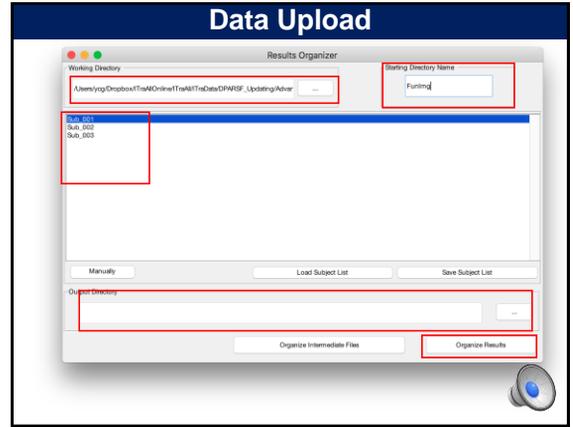
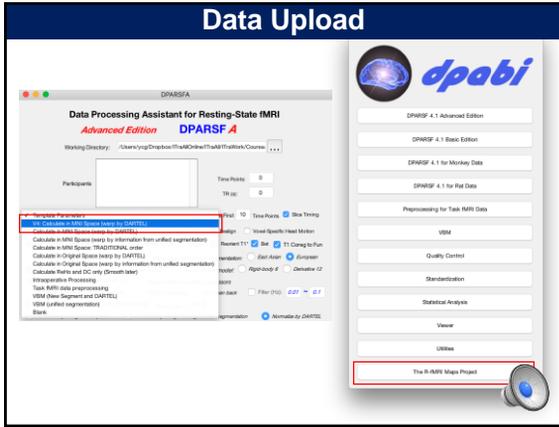
- AllResampled\_...91x109x91.nii
- AllResampled\_...91x109x91.nii
- AllResampled\_...91x109x91.nii
- AllResampled\_...91x109x91.nii
- AutoMasks
- SegmentationMasks

### Quality Control

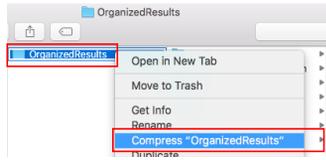
### Quality Control

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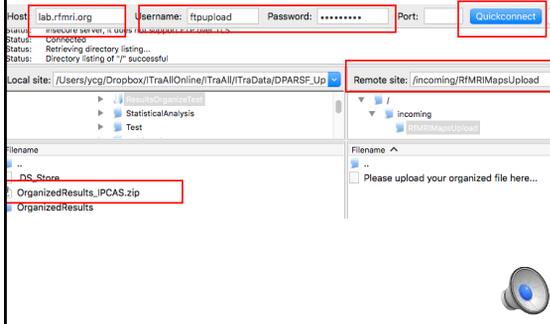
## Data Upload



## Data Upload

1. FTP: lab.rfmri.org; username: ftpupload; password: FTPUpload. E.g., FileZilla

## Data Upload

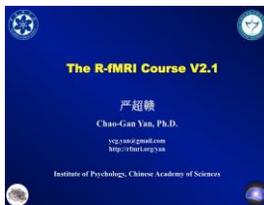


## Data Upload

1. FTP: lab.rfmri.org; username: ftpupload; password: FTPUpload. E.g., FileZilla
2. 网盘
3. QQ邮箱超大附件

请发邮件到 [rfmri@lab@gmail.com](mailto:rfmri@lab@gmail.com) 告知我们，并附上行为资料数据表格。

## Further Help



<http://rfmri.org/Course>



<http://rfmri.org/wiki>



The R-fMRI Journal Club



Official Account: RFMRIL

## Preprints of the R-fMRI Network



Preprints of the R-fMRI Network (PRN) is a preprint, open-access, free-submission, open-discussion, community funded Preprints of R-fMRI related research. The goal of PRN is to supplement the peer reviewed journal publication system - by more rapidly communicating the latest research achievements across the global.

F1000Research

F1000Research.2018.3.31311.html, last updated 21 AUG 2019



SOFTWARE TOOL ARTICLE

**PRN: a preprint service for catalyzing R-fMRI and neuroscience related studies [v2; ref status: indexed, http://f1000r.es/5qy]**

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ChinaXiv  
中国科学院科技论文预发布平台

## 数据分析与深度培训



### 静态功能磁共振成像深度数据分析

功能磁共振成像越来越成为一种主流的科研手段,然而功能磁共振的数据分析却是一项具有高度挑战性的工作。海量的原始数据,繁多的分析步骤,复杂的分析方法都让研究者们无所适从,恰当的分析方法可以从普通的数据中挖掘出富有创新性的结果,而不恰当的分析则可能让精心收集的数据黯然失色。深度大脑公司联合中国科学院 The R-fMRI Lab 的专业脑功能成像研究团队推出一站式功能磁共振数据分析解决方案,助您从容应对功能磁共振数据带来的挑战。

<http://deepbrain.com>



### 静态功能磁共振成像数据处理深度培训

从您见到这条消息开始,您便将有机会与中国科学院 The R-fMRI Lab 的静态功能磁共振专家团队共同探索大脑的奥秘!深度培训期间,您将亲身体验:

- 数据处理 专家指导下高效学习静态功能磁共振数据处理
- 思路设计 与国际知名专家讨论研究思路
- 论文撰写 系统的 SCI 论文写作训练



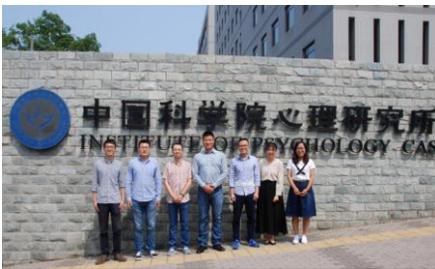
## The R-fMRI Lab



WeChat Official Account: RfMRILab



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Center  
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**Thanks for your attention!**

