



# Fischl Laboratory for Computational Neuroimaging



**Allison Stevens**  
I am part of the FreeSurfer development team that helps test these tools. Part of my job consists of teaching others how to use FreeSurfer. I've recently been using FreeSurfer to analyze data for the VETSVA project and the Eysenck/Hughes Heart Study. I also scan and reconstruct ex-vivo brains.

**Nick Schmansky**  
I provide software engineering maintenance, and usage support, of the FreeSurfer software application. Think "Scotty" in the Enterprise engine room from Star Trek.

**David Salat**  
My research examines brain changes with aging and neurologic diseases using MRI including structural and functional imaging procedures (fMRI, DTI). I am particularly interested in using imaging techniques to describe pathology that differentiates Alzheimer's disease (AD) from changes due to nonemotional aging and conditions associated with aging such as vascular risk. It is possible that such measures would be useful biomarkers for therapeutic trials. I am also interested in relating the *in vivo* imaging changes to histopathology for a better understanding of disease mechanisms.

**Bruce Fischl**  
My current work involves finding microscopically observable signature of the macroscopically visible laminar structure of the cortex. We are investigating this using both fixed ex vivo brains as well as high resolution *in vivo* imaging. The ultimate goal is to develop sequences and algorithms for the automatic segmentation of architecturally defined regions in the human brain.

**Dong Greve**  
I'm about 5'11.55 pounds, brown hair, brown eyes. But as far as work goes, I'm responsible for the functional analysis inside FreeSurfer as well as structural-functional integration and inter-subject analysis. I have interests in identifying, quantifying, and removing the various sources of noise in fMRI. I am involved in the Functional Biomedical Informatics Research Network (fBIRN), a consortium study on the repeatability of fMRI across scanners.

**Dennis Jen**  
I'm working on two projects currently. The first project is to optimize our method for calculating the highest probability path between two user-defined regions from DTI. The best path is determined by minimizing the energy of the entire path through randomization of the position of the control points of a spline curve drawn through the data and of the position of the endpoints. The second project is to develop visualizations for DTI and the output of the most probable path.

**Jean Augustinack**  
3D Reconstruction of 100um flash images of entorhinal surface in ex vivo MR imaging. Two different cases that show the ventrolateral view of entorhinal cortex. Note the entorhinal veraccue (A) and the EC surface and the lack of veraccue on the case (B). Entorhinal veraccue were detected on 100 microns isotropic MRI data. Furthermore, we have correlated the presence of the MR veraccue with MR islands and verified the location of the veraccue using MRI image, blockface images and stained Nissl sections.

**Lilla Zolai**  
I am a Research Fellow working on the inter-subject image registration problem. Given the same type of MRI acquisition for different subjects, the goal is to find corresponding features and place them into the same coordinate system. Currently, I am interested in using information from diffusion weighted images in order to improve on currently existing surface-based alignment methods. To test for improvement, we use functional activation maps and measure whether the overlap of corresponding areas can be increased. Another project that I am involved in, brings together volumetric and surface-based registration methods in order to achieve good alignment between both cortical and subcortical structures.

**Anastasia Vendiki**  
At any given moment you might find me working on a multi-site study of the reliability of fMRI activation indices from a working memory paradigm; improving power for fMRI activation detection by optimal smoothing bayesian methods for reconstructing diffusion tensors based on a verified forward model of the MR physics; bayesian tractography constrained by FreeSurfer cortical parcellations; or none of the above.

**Stephanie Lee**  
I work for Diana Bonus and David Salat studying mainly Huntington's disease, although we also study Alzheimer's and aging.

**Koen Van Leemput**  
I am developing computational methods to automatically segment subregions of the hippocampus in MRI scans of the brain. Using manual delineations of high-resolution images, the aim of my work is to build statistical anatomical models of the hippocampus and its substructures, and to use these models to automatically segment hippocampal subregions in both high-resolution and more standard resolution images.

**Peng Yu**  
The goal of my work is to develop a procedure for automatically detecting the morphological variation of a variety of neuroanatomical structures from MR images and conducting statistical analyses. For this purpose, we first use FreeSurfer tools for reconstructing and registering cortical surfaces and subcortical structures, such as hippocampus. Next, we develop a procedure to decompose the surface of the structure of interest using spherical wavelets. At last, we apply statistical tools to study and classify shape variations using the wavelet coefficients under different pathological or neurodevelopmental conditions.

**Andre van der Kouwe**  
I'm about 4'7", 285 pounds, blonde hair, blue eyes. I'm working on pulse sequences for structural morphometry including motion correction with diorectaf navigators and multiecho MPRAGE. I'm also involved with imaging on the 7 Tesla scanner.

**WARNING**

This POSTER has been approved for MARTINOS audiences

T2\* This poster is weighted T2\*  
Bruce Fischl Guidance Suggested



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