

[Homepage](#)[Journal Contents](#)[Search Contents](#)[Author Resources](#)[Journal Information](#)[Online Resources](#)[Subscribe](#)[QuickSearch  
Journal Content](#) [Previous Abstract](#)[Next Abstract](#)

TITLE: Functional magnetic resonance imaging in macaque cortex

JOURNAL: NeuroReport

VOLUME: 09

ISSUE: 10

PAGES: 2213-2218

RECEIVED: 3 April 1998

ACCEPTED: 26 April 1998

AUTHOR: David J Dubowitz, Dar-Yeong Chen,<sup>1</sup> Dennis J. Atkinson,<sup>2</sup>,  
Kenneth L. Grieve<sup>3</sup>, Betty Gillikin, William G. Bradley Jr<sup>1</sup>, Richard A.  
Andersen<sup>CA</sup>

ADDRESS: Division of Biology, 216-76, California Institute of  
Technology, Pasadena, CA 91125, USA; <sup>1</sup>Long Beach MRI Center, Long  
Beach Memorial Medical Center, Long Beach, CA 90806, USA; <sup>2</sup>Siemens  
Medical Systems R&D, Iselin NJ 08830, USA; <sup>3</sup>Department of Optometry  
and Vision Sciences, University of Manchester Institute of Science and  
Technology, Manchester, UK

THE ability to use fMRI in a monkey model would bridge the gap between the fMRI demonstration of cerebral activation in humans and the cumulative wealth of monkey data on the functional organization of the brain from single electrode mapping, radioisotope and histology studies. We report a new technique for fMRI in an awake co-operative rhesus macaque (*Macaca mulatta*) in a conventional clinical 1.5T MR scanner and present the first fMRI images from a macaque. Good resolution, signal-to-noise ratio and BOLD response (2.6-4.6%) have been achieved using the manufacturer's standard volume knee coil. T1 values of macaque gray and white matter (1490ms, 1010ms respectively) are higher than human brain, whereas T2 values are lower (55ms, 48ms respectively). An MR-compatible design for restraining the monkey is also described, along with a suitable EPI sequence for BOLD images, optimized for monkey T2, with voxel sizes from 29 to 61 $\mu$ l, and MPRAGE sequence for anatomical studies with 0.8mm isotropic resolution, optimized for monkey T1. *NeuroReport* 9:2213-2218 © 1998 Rapid Science Ltd.

**KEYWORD:** fMRI, Functional activation, Rhesus macaque monkey, Visual cortex