

论著

## 新型自适应光学系统对活体人眼视网膜细微结构的观察

姜春晖<sup>1</sup> 凌宁<sup>2</sup> 王文吉<sup>1</sup> 张雨东<sup>2</sup> 徐格致<sup>1</sup> 饶学军<sup>2</sup>

<sup>1</sup> 复旦大学附属耳鼻喉科医院眼科, 上海200031;

<sup>2</sup> 中国科学院光电技术研究所 四川成都双流350信箱 610209

收稿日期 2007-10-15 修回日期 网络版发布日期 接受日期

摘要

目的 评价新型自适应系统的成像能力及在活体人眼视网膜高分辨率成像中的应用。方法 2006年1到4月间, 我们运用改进后的自适应光学成像系统对6名18~21岁正常健康成年人进行了眼底黄斑部中心3度范围之内视网膜的成像试验。结果 通过新型自适应系统得到了黄斑清晰的视网膜高分辨率图像; 包括来自于视网膜内、中、外不同层次的图像。其中内层为视网膜表层的毛细血管, 而外层可能为视觉感受细胞的外节。结论 运用自适应光学可实现活体人眼视网膜的高分辨率成像, 在年轻人中可以获得高分辨率的黄斑部视网膜毛细血管和视锥细胞外节的图像, 它可能在眼科研究领域发挥一定的作用。

关键词 [视觉感受器; 视网膜血管; 视网膜成像; 自适应光学](#)

分类号

## Observation of microstructure in living retina using adaptive optics

JIANG Chun-hui<sup>1</sup>△, LIN Nin<sup>2</sup>, WANG Wen-ji<sup>1</sup>, ZHANG Yu-dong<sup>2</sup>, XU Ge-zhi<sup>1</sup>, RAO Xue-jun<sup>2</sup>

<sup>1</sup> Department of Ophthalmology, Eye&Ear Nose Throat Hospital, Fudan University, Shanghai 200031, China;

<sup>2</sup> Institute of Optics and Electronics, Chinese Academy of Sciences, Chengdu, Sichuan Province 610209, China

Abstract

Objective To evaluate the ability of new generation of adaptive optic system in high resolution imaging of living retina. Methods From January to April of 2006, the fundus area within three degrees from the central fovea from 6 normal volunteers were checked using a tailor-made adaptive optics system. The age of the subjects varied from 18 to 21 years. All had normal visual acuity of 1.0. No abnormality was found in ocular exam, and their medical as well as ocular histories were unremarkable. Results By using the new adaptive optic system, high-resolution images of inner, middle and outer layers of the retina were obtained from area with 3 degree from the macula. From their location and features, it was determined that the inner layer was the superficial capillary system and the outer layer was possibly the outer segment of the photoreceptor. However, the nature of the middle layer could not be determined. Conclusion Adaptive Optics System (AO) is capable to get high-resolution image of macula in living human eye from the young volunteers, including the capillary system and the outer segment of the photoreceptor. This might be useful in ocular disease research, especially the retinal disease.

Key words [photoreceptor](#) [retinal capillary](#) [retinal imaging](#) [adaptive optics](#)

DOI:

通讯作者 姜春晖

作者个人主页 [姜春晖<sup>1</sup> 凌宁<sup>2</sup> 王文吉<sup>1</sup> 张雨东<sup>2</sup> 徐格致<sup>1</sup> 饶学军<sup>2</sup>](#)

扩展功能
本文信息
▶ <a href="#">Supporting info</a>
▶ <a href="#">PDF(678KB)</a>
▶ <a href="#">[HTML全文](OKB)</a>
▶ <a href="#">参考文献[PDF]</a>
▶ <a href="#">参考文献</a>
服务与反馈
▶ <a href="#">把本文推荐给朋友</a>
▶ <a href="#">加入我的书架</a>
▶ <a href="#">加入引用管理器</a>
▶ <a href="#">复制索引</a>
▶ <a href="#">Email Alert</a>
▶ <a href="#">文章反馈</a>
▶ <a href="#">浏览反馈信息</a>
相关信息
▶ <a href="#">本刊中 包含“视觉感受器; 视网膜血管; 视网膜成像; 自适应光学”的相关文章</a>
▶ 本文作者相关文章
· <a href="#">姜春晖 凌宁 王文吉 张雨东徐格致 饶学军</a>