Advanced Clinical Research Center

Division of Advanced Gastroenterology and Endoscopy
先端消化器内視鏡学分野

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Our field, "Division of Advanced Gastroenterology and Endoscopy," was established at the Institute of Medical Science of the University of Tokyo from October 2023. Our mission is to conduct cutting-edge endoscopy-related research and develop novel endoscopic equipment, with a focus on gastrointestinal cancer. In addition, we will conduct translational research with other research fields at the institute to create new diagnoses and treatments.

1. Introduction

Advances in endoscopic diagnosis and treatment have been remarkable. Our objective is to continue advancing, spanning from basic research in endoscopy to clinical investigations, and the creation of innovative endoscopic devices for practical clinical applications. In addition, our objective is to create novel diagnostic and therapeutic approaches through translational research in collaboration with various fundamental disciplines.

2. Research Activities

The device development in 2025 was as follows: (1) Development of a device capable of detecting high quantitative fecal occult blood in the toilet, (2) Development of artificial dermis for protecting gastrointestinal mucosal defects and (3) Development of a novel hemostatic forceps. All of these are highly novel seeds and systems that have never existed before and can be expected to be clinically useful.

(1) Development of a device capable of detecting high quantitative fecal occult blood in the toilet:

We conducted a clinical trial aimed at realizing a toilet capable of measuring fecal occult blood, with the goal of miniaturizing the detection device and narrowing down the optimal wavelengths.

(2) Development of artificial dermis for protecting gastrointestinal mucosal defects:

To address clinical challenges in gastrointestinal endoscopy, we conducted exploratory research applying novel medical materials. This study demonstrated the feasibility of an endoscopic protective method for gastrointestinal mucosal defects using artificial dermis through both ex-vivo and in-vivo porcine experiments. These findings suggest that this simple and cost-effective approach may prevent serious complications such as delayed bleeding and perforation after endoscopic submucosal dissection (ESD).

3. Future Prospects

We will continue basic to elucidate, detect, and diagnose lesions with the aim of preventing gastrointestinal cancers and to develop innovative medical devices desired by the next generation that reflect the needs of clinical practice. In the future, we will continue to develop endoscopic equipment and attempt innovative approaches to produce all-new endoscopy approaches/devices in collaboration with academia and corporations.

In addition, we plan to further promote research and development with the aim of obtaining competitive funding.

4. Publications

1. Ikematsu H, Takara Y, Nishihara K, Kano Y, Owaki Y, Okamoto R, Fujiwara T, Takamatsu T, Yamada M, Tomioka Y, Takeshita N, Inaba A, Sunakawa H, Nakajo K, Murano T, Kadota T, Shinmura K, Koga Y, Yano T. Possibility of determining high quantitative fecal occult blood on stool surface using hyperspectral imaging. J Gastroenterol. 2025 Jan;60(1):77-85
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3. Minakata N, Ikematsu H, Kiyomi F, Inoue S, Akutagawa T, Watanabe T, Yano T, Shimoda R. Usefulness of virtual scale endoscope for early gastrointestinal lesions. DEN Open. 2024 Jun 18;5(1):e386.
4. Kakuta N, Takamatsu T, Hayashi S, Ikematsu H, Kadota T, Soga K, Yokota H, Takemura H. Development of 490-1600 nm hyperspectral imaging system based on flexible fiberscope. Opt Express. 2025 Oct 6;33(20):43260-43272.
5. Kawamura T, Oda Y, Toyoizumi H, Kato M, Sekiguchi M, Takamaru H, Mizuguchi Y, Horiguchi G, Kobayashi K, Sada M, Yokoyama A, Utsumi T, Tsuji Y, Ohki D, Takeuchi Y, Shichijo S, Ikematsu H, Matsuda K, Teramukai S, Kobayashi N, Matsuda T, Saito Y, Tanaka K. Risk of colorectal cancer among fecal immunochemical test-positive individuals by timing of previous colonoscopy: A multicenter analysis. J Gastroenterol Hepatol. 2025 Jan;40(1):153-158.
6. Hattori A, Ikematsu H, Yamashita H, Oguro T, Goto M, Yamazaki T, Sasabe M, Minakata N, Watanabe T, Mitsui T, Inaba A, Sunakawa H, Nakajo K, Murano T, Kadota T, Shinmura K, Nakagawa H, Yano T. Objective Assessment of Visibility of Colorectal Lesions Using Eye Tracking for New Image-Enhanced Endoscopy Observation. J Gastroenterol Hepatol. 2026 Jan;41(1):278-285.