

# 第 12 回ナノ・バイオメディカル学会

## 12th Annual Meeting of the Nano Biomedical Society

日 程:2017 年 11 月 9 日(木)

会 場:国立研究開発法人物質・材料研究機構  
(NIMS, 茨城県つくば市並木 1-1)  
「並木地区 WPI-MANA 棟オードトリウム」

懇親会:「並木地区 WPI-MANA 棟カフェテリア」

大会長:谷口 彰良 教授  
(NIMS 機能性材料研究拠点細胞機能化  
ナノバイオ材料グループリーダー,  
筑波大学教授, 早稲田大学教授)

## 第 12 回ナノ・バイオメディカル学会大会 プログラム

WPI-MANA 棟 オードトリウム

10:00～10:10 開会の辞 谷口 彰良(物質・材料研究機構 NIMS)

座長 竹澤 俊明(農研機構)

10:10～10:30

1. ナノ構造制御による免疫活性化 CpG ODN の機能向上

○山崎 智彦

物材研・機能性材料研究拠点・ナノメディスングループ

10:30～10:50

2. 3次元 *in vitro* 微小血管モデルデバイスの作製と応用

○高橋 治子, 松永 行子

東大・生産研

10:50～11:10

3. 学術分野における‘architecture’という用語の広がりに関する定量調査

○笠 寛子<sup>1</sup>, 森田 芳朗<sup>2</sup>, 松永 行子<sup>1</sup>

<sup>1</sup>東大生研・統合バイオメディカルシステム国際研究センター, <sup>2</sup>東京工芸大・建築学科

11:10～11:30 コーヒーブレイク

座長 市原 学(理科大)

11:30～11:50

4. Uniform TiO<sub>2</sub>-PEG nanoparticles induce apoptosis to epithelial cell line in a size-dependent manner

○Qingqing Sun<sup>1,2</sup>, Akiyoshi Taniguchi<sup>1,2</sup>

<sup>1</sup>National Institute for Materials Science (NIMS),

<sup>2</sup> Graduate School of Advanced Science and Engineering,

Waseda University

11:50～12:10

5. Interaction between silver nanoparticles and Tumor necrosis factor in lung epithelial cells

○Alaa Fehaid<sup>1,2</sup>, Akiyoshi Taniguchi<sup>1,2</sup>

<sup>1</sup>Cellular Functional Nanobiomaterials Group, Research Center for Functional Materials,  
National Institute for Materials Science (NIMS),

<sup>2</sup>Graduate School of Advanced Science and Engineering,  
Waseda University

12:10～12:30

6. Epidermal growth factor enhances cellular uptake of polystyrene nanoparticles by clathrin-mediated endocytosis

○Le Thi Minh Phuc<sup>1,2</sup>, Akiyoshi Taniguchi<sup>1,2</sup>

<sup>1</sup>Cellular Functional Nanobiomaterials Group, Research Center for Functional Materials,  
National Institute for Materials Science (NIMS),

<sup>2</sup>Graduate School of Advanced Science and Engineering,  
Waseda University

12:30～12:40 総会

12:40～13:30 ランチタイム

座長 吉本 敬太郎(東大)

13:30～13:50

7. Regulation of Stem Cell Functions through Nano/Micro Hybrid Patterns

○Yingjun Yang<sup>1,2</sup>, Xinlong Wang<sup>1</sup>, Naoki Kawazoe<sup>1</sup> and Guoping Chen<sup>1,2</sup>

<sup>1</sup>Tissue Regeneration Materials Group, Research Center for Functional Material,  
National Institute for Materials Science (NIMS)

<sup>2</sup> Department of Materials Science and Engineering,  
Graduate School of Pure and Applied Sciences, University of Tsukuba

13:50～14:10

**8. Preparation of dexamethasone-loaded biphasic calcium phosphate nanoparticles/collagen porous composite scaffolds for bone tissue engineering**

○Ying Chen<sup>1,2</sup>, Naoki Kawazoe<sup>1</sup>, and Guoping Chen<sup>1,2</sup>

<sup>1</sup> Research Center for Functional Materials, National Institute for Materials Science

<sup>2</sup> Department of Materials Science and Engineering,  
Graduate School of Pure and Applied Sciences, University of Tsukuba

14:10～14:30

**9. 幹細胞の機能への細胞接着面積と伸展面積の影響比較**

—マイクロパターン化表面の利用—

○川添 直輝, 王 新竜, 陳 国平  
物材機構・機能性材料研究拠点

14:30～14:50

**10. 口腔癌由来細胞を用いた三次元腫瘍微小環境の確立**

○中西 環<sup>1</sup>, 今井 弘一<sup>2</sup>, 森田 章介<sup>1</sup>

<sup>1</sup>大阪歯科大学口腔外科学第一講座, <sup>2</sup>大阪歯科大学歯科理工学講座

14:30～15:10 コーヒーブレイク

座長 松永 行子(東大)

15:10～15:30

**11. コラーゲンビトリゲル膜チャンバーを用いて迅速に肝機能が賦活化された HepG2 細胞における胆汁排泄トランスポーターの発現**

○押方 歩, 竹澤 俊明

国立研究開発法人農業・食品産業技術総合研究機構 生物機能利用研究部門  
新産業開拓研究領域

15:30～15:50

**12. ナノ線維網からなるコラーゲンビトリゲル膜を利用した角膜モデルの薬剤透過性試験**

○山口 宏之<sup>1,2</sup>, 竹澤 俊明<sup>1</sup>

<sup>1</sup>農業・食品産業技術総合研究機構 生物機能利用研究部門,  
<sup>2</sup>関東化学株式会社 伊勢原研究所

15:50～16:10

**13. E-カドヘリン結合性 DNA アプタマー修飾表面の細胞接着特性**

○丸山 亮<sup>1</sup>, 吉富 徹<sup>1</sup>, 和久井 幸二<sup>1</sup>, 古性 均<sup>2</sup>, 吉本 敬太郎<sup>1,3</sup>

<sup>1</sup>東大院・広域生命, <sup>2</sup>日産化学工業, <sup>3</sup>JST・さきがけ

16:10～16:30

**14. マイクロ粒子導入型キャピラリー電気泳動による核酸アプタマー選抜**

○和久井 幸二<sup>1</sup>, 吉富 徹<sup>1</sup>, 山口 茜<sup>2</sup>, 土田 真帆<sup>2</sup>, 齋藤 伸吾<sup>2</sup>,  
渋谷 雅美<sup>2</sup>, 古性 均<sup>3</sup>, 吉本 敬太郎<sup>1,4</sup>

<sup>1</sup>東大院・広域生命, <sup>2</sup>埼大院・理工, <sup>3</sup>日産化学, <sup>4</sup>JST, PRESTO

16:30～16:50

**15. 酸化チタンナノ粒子の物理化学的特性による影響**

林田 有紗<sup>1</sup>, 市原 学<sup>1</sup>, 渡辺 英里<sup>1</sup>, 鈴木 悠加<sup>2</sup>, 古谷 知己<sup>2</sup>, 出岡 淑<sup>2</sup>,

○市原 佐保子<sup>3</sup>

<sup>1</sup>東京理科大・薬, <sup>2</sup>三重大院・地域イノベーション, <sup>3</sup>自治医大・医

16:50～16:55 閉会の辞 今井 弘一(大阪歯大)

17:00～18:20 懇親会 WPI-MANA 棟カフェテリア

## 12th Annual Meeting of the Nano Biomedical Society

WPI-MANA Building Auditorium

10:00~10:10 Opening remarks Akiyoshi Taniguchi (National Institute for Materials Science)

**Chair: Toshiaki Takezawa (National Agriculture and Food Research Organization)**

10:10~10:30

**1. Enhancement of immunostimulatory activity of CpG oligodeoxynucleotides by nanoengineering**

○Tomohiko YAMAZAKI

Nanomedicine Group, Research Center for Functional Materials,  
National Institute for Materials Science (NIMS)

10:30~10:50

**2. Preparation and application of 3D *in vitro* microvessel device**

○Haruko Takahashi and Yukiko T. Matsunaga  
IIS, University of Tokyo

10:50~11:10

**3. Quantitative investigation of academic literature including "architecture" in title**

○Hiroko Ryu<sup>1</sup>, Yoshiro Morita<sup>2</sup>, Yukiko. T. Matsunaga<sup>1</sup>

<sup>1</sup>Dept.of Center for International Research on Integrative Biomedical Systems Tokyo Univ.,  
<sup>2</sup>Dept.of Architecture Tokyo Polytechnic Univ.

11:10~11:30 Coffee break

**Chair: Gaku Ichihara (Tokyo University of Science)**

11:30~11:50

**4. Uniform TiO<sub>2</sub>-PEG nanoparticles induce apoptosis to epithelial cell line in a size-dependent manner**

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National Institute for Materials Science (NIMS),  
<sup>2</sup>Graduate School of Advanced Science and Engineering,  
Waseda University

12:30~12:40 General meeting

12:40~13:30 Lunch time

**Chair: Keitaro Yoshimoto (University of Tokyo)**

13:30~13:50

**7. Regulation of Stem Cell Functions through Nano/Micro Hybrid Patterns**

○Yingjun Yang<sup>1,2</sup>, Xinlong Wang<sup>1</sup>, Naoki Kawazoe<sup>1</sup> and Guoping Chen<sup>1,2</sup>

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○Ying Chen<sup>1,2</sup>, Naoki Kawazoe<sup>1</sup>, and Guoping Chen<sup>1,2</sup>

<sup>1</sup> Research Center for Functional Materials, National Institute for Materials Science

<sup>2</sup> Department of Materials Science and Engineering,  
Graduate School of Pure and Applied Sciences, University of Tsukuba

14:10~14:30

**9. Direct comparison of the independent influence of cell adhesion and spreading area on stem cell function using micropatterned surfaces**

○Naoki Kawazoe, Xinlong Wang, Guoping Chen

Research Center for Functional Materials, National Institute for Materials Science

14:30~14:50

**10. Establishment of three dimensional tumor microenvironment using oral cancer cells**

○Tamaki Nakanishi<sup>1</sup>, Koichi Imai<sup>2</sup>, Shosuke Morita<sup>1</sup>,

<sup>1</sup>First Department of Oral and Maxillofacial Surgery, Osaka Dental University,

<sup>2</sup> Department of Biomaterials, Osaka Dental University.

14:30~15:10 Coffee break

**Chair: Yukiko T. Matsunaga (University of Tokyo)**

15:10~15:30

**11. Expression of bile excretion transporters in HepG2 cells that liver functions were rapidly activated using a collagen vitrigel membrane chamber**

○Ayumi Oshikata, Toshiaki Takezawa

Division of Biotechnology, Institute of Agrobiological Sciences,  
National Agriculture and Food Research organization

15:30~15:50

**12. Drug permeability test in corneal models utilizing a collagen vitrigel membrane composed of nanofiber networks**

○Hiroyuki Yamaguchi<sup>1,2</sup>, Toshiaki Takezawa<sup>1</sup>

<sup>1</sup> Institute of Agrobiological Sciences, National Agriculture and Food Research Organization,

<sup>2</sup> Isehara Research Laboratory, Kanto Chemical Co., Inc.

15:50~16:10

**13. Cell adhesion properties on E-cadherin-binding DNA aptamer modified surface**

○Ryo Maruyama<sup>1</sup>, Toru Yoshitomi<sup>1</sup>, Koji Wakui<sup>1</sup>, Hitoshi Furusho<sup>2</sup>, Keitaro Yoshimoto<sup>\*,1,3</sup>

<sup>1</sup>Univ. Tokyo, Life Sciences, <sup>2</sup> Nissan Chemical Industries, Ltd., <sup>3</sup>JST, PRESTO

16:10~16:30

**14. In Vitro Selection of Aptamers by Microbeads-Assisted Capillary Electrophoresis (MACE) SELEX.**

○Koji Wakui<sup>1</sup>, Toru Yoshitomi<sup>1</sup>, Akane Yamaguchi<sup>2</sup>, Maho Tsuchida<sup>2</sup>, Shingo Saito<sup>2</sup>,  
Masami Shibukawa<sup>2</sup>, Hitoshi Furusho<sup>3</sup>, Keitaro Yoshimoto<sup>\*,1,4</sup>

<sup>1</sup>Life Sci., The Univ. of Tokyo, <sup>2</sup>Sci. and Eng., Saitama Univ., <sup>3</sup>Nissan Chem., <sup>4</sup>JST, PRESTO

16:30~16:50

**15. Effect of physicochemical characteristics of nano-sized TiO<sub>2</sub> on adhesion of monocytes to endothelial cells**

Arisa Hayasida<sup>1</sup>, Gaku Ichihara<sup>1</sup>, Eri Watanabe<sup>1</sup>, Yuka Suzuki<sup>2</sup>, Tomoki Furutani<sup>2</sup>,  
Kiyora Izuoka<sup>2</sup>, ○Sahoko Ichihara<sup>3</sup>

<sup>1</sup>Dept. of Occup Environ Health, Tokyo Univ Sci, <sup>2</sup>Grad. of Reg Innov, Mie Univ,

<sup>3</sup>Dept. of Environ Prev Med, Jichi Med Univ

16:50~16:55 Closing remarks: Koichi Imai (Osaka Dental University)

17:00~18:20 Social gathering (WPI-MANA Cafeteria)