



SEMINAR: UNIVERSITY OF TSUKUBA: INSTITUTE OF BASIC MEDICAL SCIENCES

演題: SYNTHESIS, THERAPEUTIC POTENTIAL AND BIOSENSOR
APPLICATIONS OF ANGIOTENSIN II, MscL AND APPA PHYTASE.

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日時: 2012年6月21日 木曜日 (THURSDAY) 3:00 – 4:00pm

会場: 医学系学イノベーション棟8階講堂

Institute of Basic Medical Sciences: Health and Medical Science
Innovation Laboratory, Auditorium, 8th Floor)

要旨: Peptide synthesis and molecular biology techniques allow researchers to make and engineer polypeptides for the purpose of structure function studies, drug design and commercial application. Presented are examples of three peptides or proteins that have been synthetically made or modified by rational design for these purposes;

(1) - **ANGIOTENSIN II ANALOGS** have been made by peptide synthesis to investigate its interaction with receptors and enzymes involved in regulation of cardiovascular tone, with analogs identified that have potential as inhibitors of angiotensin converting enzyme 2 (ACE2) or have selective angiotensin II receptor 2 action. Therapeutics based on these leads could moderate either hypotensive or hypertensive disease profiles.

(2) **MECHANOSENSITIVE CHANNELS:** protein synthesis techniques have been used to make two homologues, and a number of fluorescent analogs, of the mechanosensitive channel of large conductance (MscL). Reconstitution of this channel into a novel model membrane system allowed biophysical investigations of this channel to be performed. Fluorescent and other analogs of this channel have potential for use in dynamic structural investigations of the channels osmoregulatory function and as optical, or conductance probes in biosensor applications.

(3) **APPA PHYTASE:** protein engineering approaches have been used to enhance the thermotolerance of *E. coli* appa phytase. Hydrophobic core augmentation, and disulphide-bond incorporation resulted in significant increases in unfolding temperature and conferred the ability of the protein to refold after exposure to temperatures of 100 degrees Celcius. These mutant thermotolerant phytases will be useful as additives during the heat-based pelleting of feed for monogastric animals, in order to reduce phosphate pollution of waterways and circumvent the expensive addition of phosphorous.

REFERENCES

(1) Clayton et al. J Molecular Recognition, 2011 24:235-244.

Link: <http://onlinelibrary.wiley.com/doi/10.1002/jmr.1041/pdf>

(2) Jones et al Hypertension. 2011 57:570-576.

Link: <http://hyper.ahajournals.org/content/57/3/570.full.pdf+html>

(3) Clayton et al. 2004. PNAS 101:4764-9.

Link: <http://www.pnas.org/content/101/14/4764.full.pdf+html>

連絡先: ホール ラブ (PHYSICAL CHEMISTRY OF DISEASE) の セミナ。

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