

Research in the Institutes

- as Women Scientist

Miho Izumikawa

JBIRC, AIST

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Career

2001 Ph.D. of science - The University of Tokyo, School of Science

2001 - 2005 research associate - University of Arizona, College of Pharmacy

2005 - 2007 research scientist - RIKEN Institute

2007 - current research scientist- National Institute of Advanced Industrial
Science and Technology (AIST)

Research field

organic chemistry

biochemistry, molecular biology, enzymology, biological chemistry

natural product

biosynthesis, isolation, structure determination

Private

track and field - long distance

marathon

champion of 2001 Tucson marathon



Research

¶ The University of Tokyo

Biosynthesis of polyether compounds

- Origin of oxygen atoms elucidated by CID-MS/MS

Cloning of biosynthetic genes for polyether compounds

¶ University of Arizona

Mechanistic and structural analysis of bacterial type III PKSs

Analysis of priming mechanism in enterocin biosynthesis

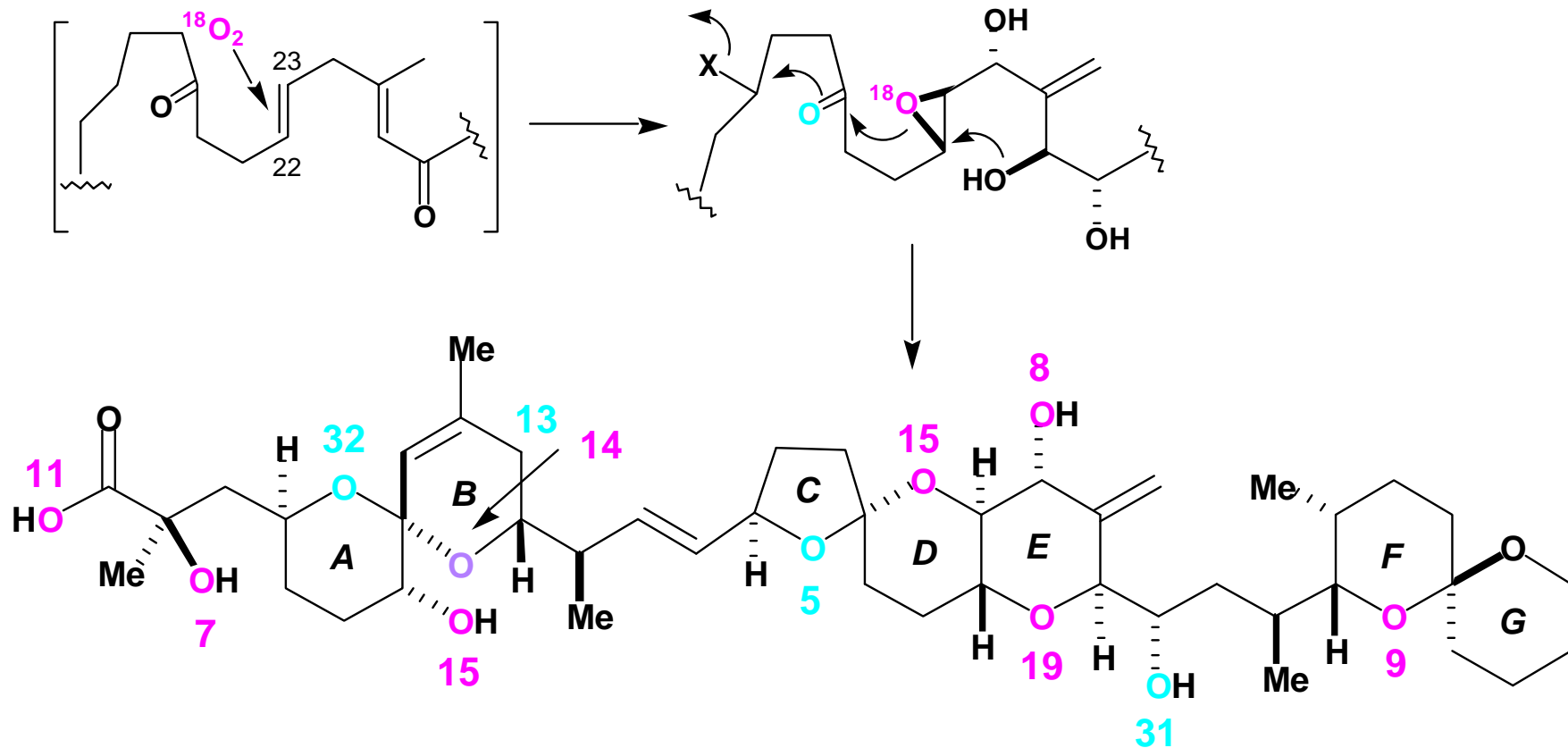
¶ RIKEN PSC

Metabolomic approach of plant cellular chemical biology by NMR spectroscopy

¶ JBIRC, AIST

Isolation and structure determination of novel natural products

Labeling pattern of okadaic acid from $^{18}\text{O}_2$ and $[^{18}\text{O}_2]$ acetate



○ is from $^{18}\text{O}_2$ and ○ is from $[^{18}\text{O}_2]$ acetate.

Figures on oxygen atoms denote incorporation ratios in % .

Cloning of biosynthetic genes

Constraction of genomic DNA library

- ↓ partial digestion of *S. albus* genomic DNA with *Sau* 3AI
- ↓ ligation with pOJ 446 / *Hpa* I / *SAP* / *Bam* HI
- ↓ Gigapack III XL packaging
- ↓ transformation (XL1-Blue MRF' host cells)
- ↓ spread on LB / geneticin plate
- ↓ transformants harboring cosmids
total > 3 x 10⁴ clones

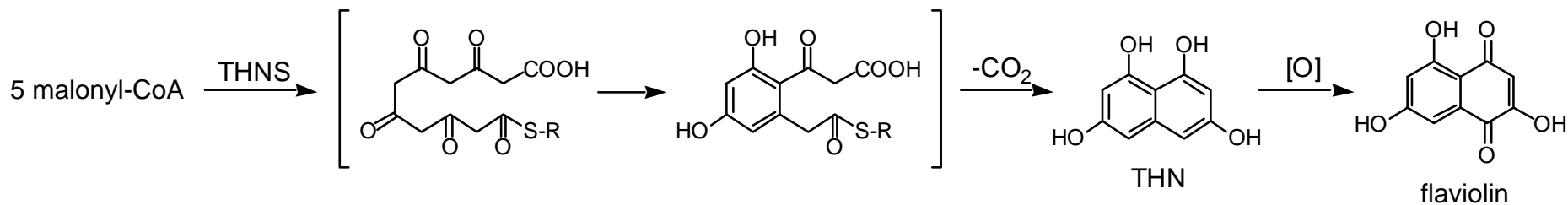
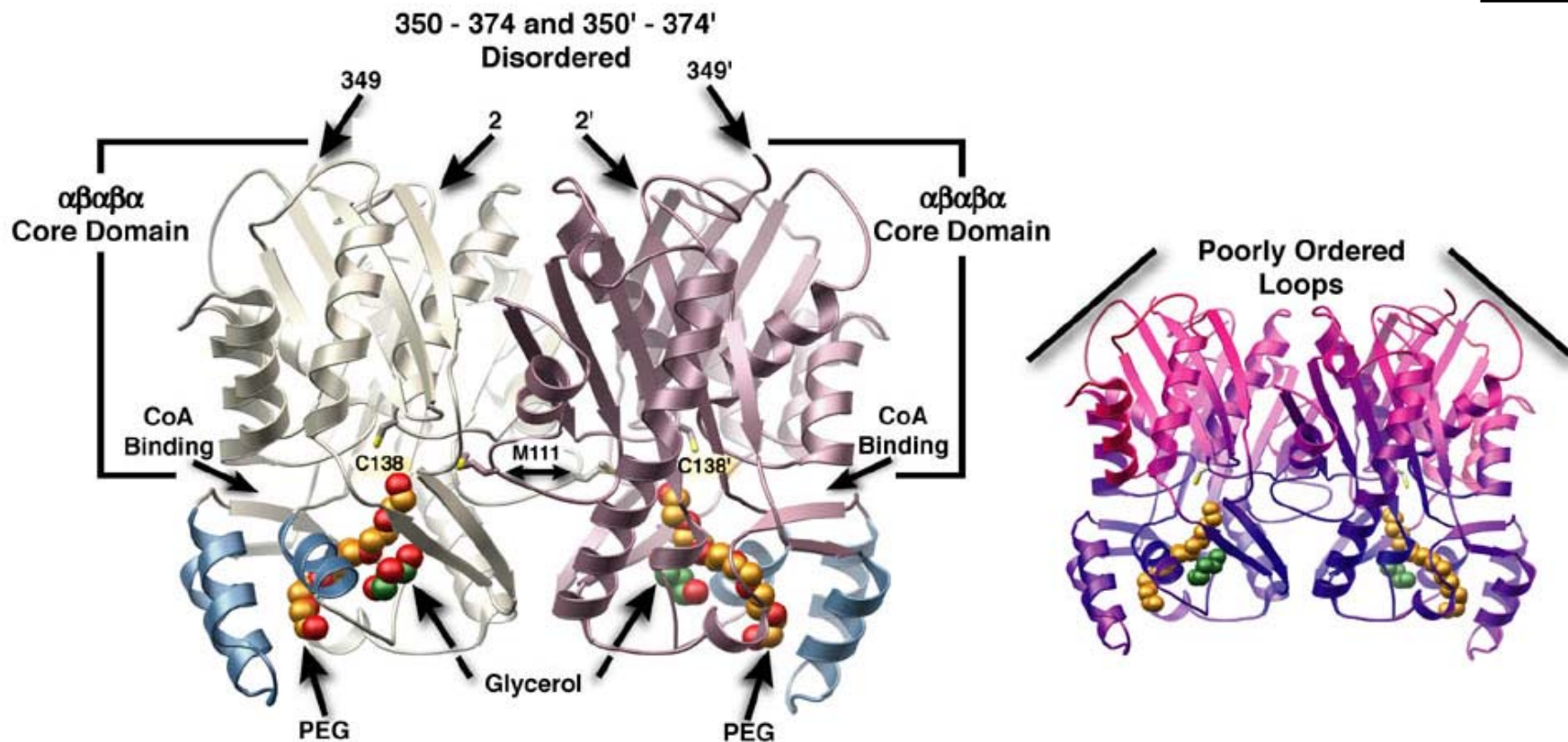
Colony hybridization

- ↓ colonies / plate transfer to Nytran
- ↓ hybridization
probe : PCR fragment (KS core region)
- ↓ color detection

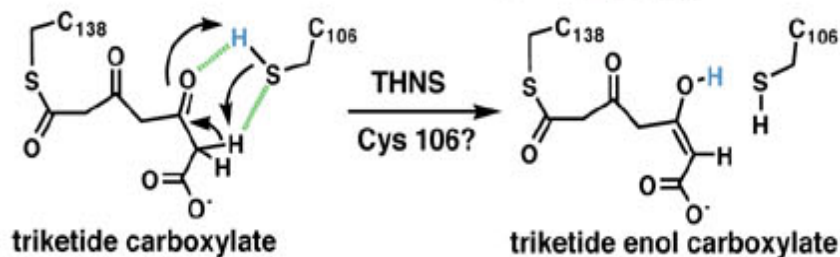
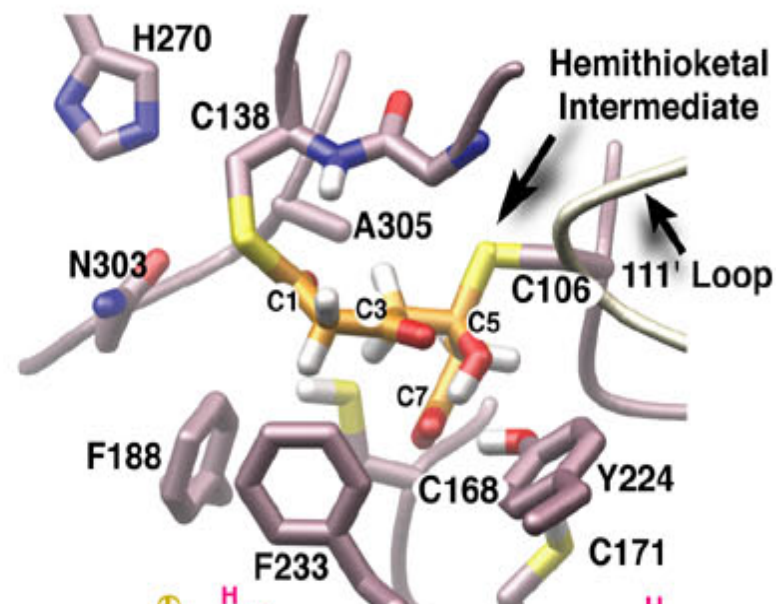
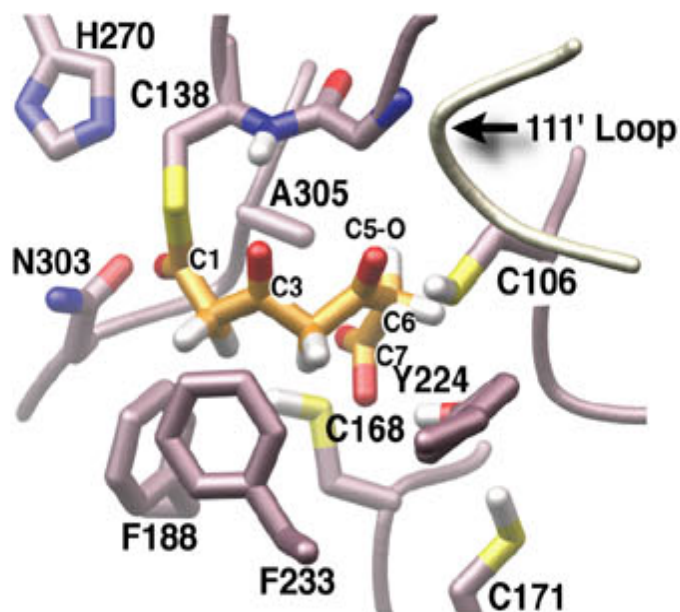
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Crystal structure of *S. coelicolor* THNS



Competing THNS mechanisms and role of C106



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Institutes

¶ systematic management

¶ clean and well-regulated laboratory

¶ huge budget

¶ expensive equipments, common staffs

¶ communication and collaboration with other fields

¶ technical support

¶ big project

¶ motivation, scientific interest

¶ skill up, step up

Woman scientist

¶ career up

¶ supporting system

- house keeping, child and family care

- nursery, day care center

¶ community

- younger scientist

¶ flexible working time

Summary

¶ Research in the institutes

- knowledge, techniques, experiences, and achievements

¶ As woman scientist

- career up
- scientific work and private life