Yamamoto. *Chem Synth* 2021;1:7 **DOI:** 10.20517/cs.2021.12

# **Chemical Synthesis**

# **Research Highlight**



Check for updates

# Sterol biosynthesis: 2,3-oxidosqualene analogues

#### Hisashi Yamamoto<sup>\*</sup>

Molecular Catalyst Research Center, Chubu University, Kasugai, Aichi 487-8501, Japan.

\***Correspondence to:** Prof./Dr. Hisashi Yamamoto, Molecular Catalyst Research Center, Chubu University, 1200 Matsumoto-cho, Kasugai, Aichi 487-8501, Japan. E-mail: yamamoto.hisashi@gmail.com

**How to cite this article:** Yamamoto H. Sterol biosynthesis: 2,3-oxidosqualene analogues. *Chem Synth* 2021;1:7. https://dx.doi.org/10.20517/cs.2021.12

Received: 19 Aug 2021 Accepted: 20 Aug 2021 Available online: 24 Aug 2021

Academic Editor: Bao-Lian Su Copy Editor: Xi-Jun Chen Production Editor: Xi-Jun Chen

Recently, Krief *et al.*<sup>[1]</sup> reported the schizophrenic behavior of oxidosqualene sterol cyclase from pig liver towards 2,3-oxidosqualene analogs bearing two alkyl groups different from a methyl.

The topic of this work is the relatively limited area of squalene cyclization and its rather small aspects of steroid synthesis, but it is the most important biological<sup>[2]</sup> synthesis of human beings because it is the starting point of steroid synthesis. There are several mysteries of this selectivity, and the topic of this paper is one of the most important steps of biosynthesis. This paper clearly shows the reason for these mysterious issues. The final stage of cyclization generates the necessary rotation of the C-C bond to create the necessary stereochemistry of the product steroid<sup>[3]</sup>. The authors nicely used the different size of the alkyl group to explain the biological synthesis of steroids.

The paper "Schizophrenic behavior of 2,3-Oxidosqualene Sterol Cyclase from pig liver towards 2,3oxidosqualene analogues" is outstanding because it solves the long-standing problem of sterol biosynthesis. Congratulations for a great contribution!

**DECLARATIONS Authors' contributions** The author contributed solely to the article.



© The Author(s) 2021. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as

long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.





#### Availability of data and materials

Not applicable.

**Financial support and sponsorship** None.

## Conflicts of interest

The author declared that there are no conflicts of interest.

## Ethical approval and consent to participate

Not applicable.

#### **Consent for publication**

Not applicable.

#### Copyright

© The Author(s) 2021.

# REFERENCES

- 1. Krief A, Sable R, Ronvaux A, Dumont W, Sandra P, David F. Schizophrenic behavior of 2,3-Oxidosqualene Sterol Cyclase from pig liver towards 2,3-oxidosqualene analogues. *Chem Synth* 2021;1:6. DOI
- 2. Thoma R, Schulz-Gasch T, D'Arcy B, et al. Insight into steroid scaffold formation from the structure of human oxidosqualene cyclase. *Nature* 2004;432:118-22. DOI PubMed
- 3. Barrett A, Ma T, Mies T. Recent developments in polyene cyclizations and their applications in natural product synthesis. *Synthesis* 2018;51:67-82. DOI