Masahiro Hirama ／Professor ／Graduate School of Science

Profile

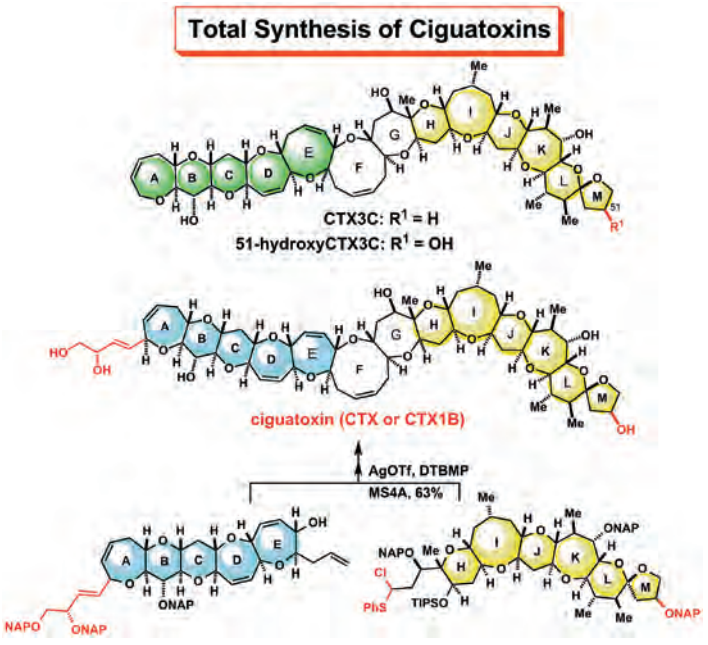
Masahiro Hirama studied for his PhD at Tohoku University, and did his postdoctoral studies at the University of Pittsburgh and at MIT. In 1980 he returned to Japan and joined Suntory Institute for Bioorganic Research (Nakanishi's Institute), where he completed the total synthesis of compactins. In 1983, he moved to Tohoku University and was promoted to Professor of Chemistry in 1989. His total synthesis of ciguatoxin in 2001 has been recognized as a landmark of the Art of Organic Synthesis in the world.

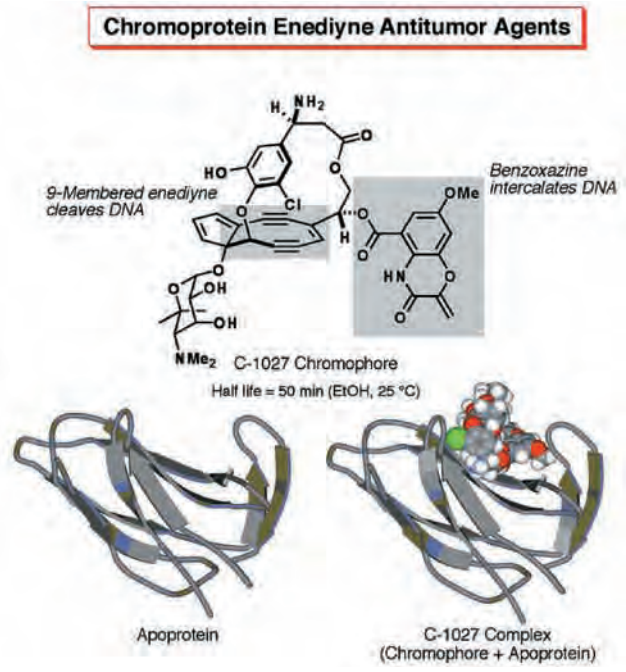
He has concurrently served as Director of the CREST and then the SORST Projects of JST, and the Research and Analytical Center for Giant Molecules, Graduate School of Science. He received the Incentive Award in Synthetic Organic Chemistry in 1986, the Inoue Prize for Science in 1997, the Synthetic Organic Chemistry Award in 1999, Roche Distinguished Lecturer Award in 2000, and the Chemical Society of Japan Award in 2003.

Research Activities

Ciguatera poisoning is an important medical issue in tropical and subtropical regions. We have been developing a general method for total syntheses of ciguatoxins, the causative toxins. We achieved the first total synthesis of ciguatoxin(CTX3C) in 2001, which has been recognized worldwide as a landmark of modern organic synthesis. Practical total syntheses of ciguatoxins allow us to use them for interdisciplinary research, such as unveiling the gating mechanism of voltage sensitive sodium channels.

Highly sensitive anti-ciguatoxins monoclonal antibodies are to be developed, and the immunoassay will be able to detect ciguatoxins at the level of pg/ml in poisoned fish. These antibodies will also be utilized for treatment of the human ciguatera poisoning. Furthermore, designed pseudo-ciguatoxins have been synthesized as bio-probes for understanding the biological mechanisms. Synthetic studies of extremely potent antitumor agents such as chromoprotein nine-membered enediyne antibiotics are also outstanding in the world.





Message

Have a hungry curiosity about Nature and watch Nature carefully, so that you will find fascinating wonders. Always think of "why so?" Play with something you have made. Enjoy playing with friends, sports, music, traveling, learning, reading, writing, speaking, and so on. Never give up even if the things do not go as you desire. You will later realize that whatever has happened to you is valuable for your life, even though some experiences might have appeared useless at the time. Keep challenging!