40th WPI IIIS Seminar

"Assembly and function of RNA-induced silencing complex"

Small interfering RNAs (siRNAs) and microRNAs (miRNAs) mediate posttranscriptional gene silencing of their target mRNAs via the RNA-induced silencing complex (RISC). These small RNAs are born double-stranded and loaded into Argonaute proteins, the core component of RISC, in an ATP-dependent manner. Subsequently, the two strands of a small RNA duplex are separated within Ago protein in an ATP-independent manner. It has been enigmatic why ATP hydrolysis is required for duplex loading—apparently simple binding between the RNA duplex and Argonaute protein—but not for strand separation—a process that disrupts ~20 base pairs between the two strands. We recently showed that the Hsc70/Hsp90 chaperone machinery is required for ATP-dependent loading of small RNA duplexes, but not for strand separation, target cleavage or release of the cleavage product. We envision that the chaperone machinery consumes ATP and mediates a dynamic conformational change of Ago proteins so that they can receive bulky and rigid small RNA duplexes. I would like to discuss such action of the chaperone machinery as the driving force for the RISC assembly pathway. I would also present our recent findings on how miRNAs repress translation of their target mRNAs.

Speaker: **Dr. Yukihide Tomari**

Institute of Molecular and Cellular Biosciences,
The University of Tokyo

Date: Monday, August 25, 2014
Time: 12:00-13:00
Venue: Room #402, 4F, Health and Medical Science Innovation Laboratory, University of Tsukuba

☆Light refreshments will be served.

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