Dictyostelium discoideum protocols
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As well highlighted and stressed by the two editors (Ludwig Eichinger, Center for Biochemistry, Medical Faculty, University of Cologne, Köln, Germany and Francisco Rivero, Center for Cardiovascular and Metabolic research, the Hull York Medical School, University of Hull, UK), *Dictyostelium discoideum* is an acclaimed member of the so-called model organisms (especially for cell and developmental biology studies) due to several unique features of its life cycle history, noteworthy from one side the uncoupling between cell division and development and from the other side the transition from a unicellular to a multicellular (more than 100,000 cells aggregate by chemotaxis) stage during the life cycle. Thus, based on these premises, should result nearly obvious the biological reasons setting forth an increasingly use of this model organism *for the study of cell motility, chemotaxis, phagocytosis, endocytic vesicle traffic, cell adhesion, pattern formation, caspase-independent cell death, and, more recently, autophagy and social evolution*; what can result less obvious is the fact that now-a-days *Dictyostelium* is being increasingly used in the study of human diseases (host-pathogen interactions, microbial infections, mitochondrial diseases, pharmacogenetic studies) eventhough we are speaking of a nonmammalian model, as clearly stated by Salvatore Bozzaro (Dept. of Clinical and Biological sciences, University of Turin, Italy) signing chapter 2. All of the studies using *Dictyostelium* got a powerful acceleration from the 2005 publication of its genome sequence because from that moment large-scale methods are amenable to many studies. Chapter 1 – 6 illustrate the many resources available to the *Dictyostelium* scientific community, particularly well describing the vaste opportunities provided by the 2012 *dictyBase* and the Dicty stock center. In chapters 7 – 11 genome-wide analysis are described including a chapter devoted to the pharmacogenetics of cisplatin, and other anticancer drugs, resistance given particular attention to the role played by the sphingolipid metabolism. Chapters 12 – 20 illustrate a panoply of methods ranging from molecular genetics to biophysical techniques passing through the more traditional, but so useful, biochemical and cell biological techniques: the use of the Cre-loxP system to generate multiple Knock-out and Knock-in targeted *loci* is fascinating. Sifting the chapters 21 – 26 the readers get the opportunity to be excited by the ample range of fundamental (hot topics !) biological processes (to mention a few, infection by bacterial pathogen, vesicle formation, trafficking) that can be now-a-days approached in a very innovative way: thanks *dicty* !

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