METHODS IN MOLECULAR BIOLOGY

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Cell Migration

Methods and Protocols

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Cover Illustration: Montage of time-lapse, pseudo-colored, fluorescent images of neutrophils emerging from a drop of blood to migrate through channels in response to chemokine gradients (Courtesy of Xiao Wang and Daniel Irimia, Harvard Medical School)

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Preface

Cell migration is a characteristic of animal cells. Cell migration is highly regulated as it is critical to the development of embryos, to the patrolling of immune cells, and to the correct establishment of brain layers in the brain cortex. Cell migration is also a process of utmost importance in pathologies. We need to better learn how to control cell migration to enhance it in order to promote wound healing, for example, or to block it in order to prevent metastasis formation during cancer progression. This is a major challenge, as the migration of tumor cells is particularly plastic, since it can transit from one type to another type of cell migration.

The recent years have witnessed an explosion of new concepts and techniques applied to cell migration. Numerous assays have thus been developed to characterize cell migration in vitro, ex vivo, and in vivo. This field of cell biology has rapidly become quantitative with the import of concepts and techniques from physics. The imaging of molecular machines powering cell migration has been greatly improved and has now reached the resolution of single molecules. Furthermore, cell migration can be guided by light and through various microfabricated devices.

Cutting edge and comprehensive, *Cell Migration: Methods and Protocols* encompasses various aspects through clear and practical chapters written by experts in their field. These chapters provide specialists and nonspecialists with the latest rotocols to observe, quantify, and control cell migration. Each chapter introduces its topic, lists the necessary materials and reagents, and provides a step-by-step protocol, together with tips on troubleshooting and avoiding known pitfalls.

Palaiseau, France ***Alexis Gautreau***

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