Preface

Evolution in medicine?! Never heard of it! This quote, in essence, sums up the reaction of a medical doctor who kindly accepted to review the proposal for this book. Far from substantiating the received idea according to which doctors are against any new approach to their field, it shows that health professionals know little about the relevance of evolutionary thinking for medical practice. At first, this may be surprising: the idea that evolution can inform medicine is not new—Erasmus Darwin, Darwin's grandfather and a medical practitioner, hinted at this conceptual breakthrough more than 200 years ago—and evolutionary biologists have pleaded for more evolution into medicine for about two decades. In addition, medicine is repeatedly confronted to evolution: practitioners have to deal with antibiotic resistance, the rapid changes of a virus, or the evolution of tumour cells. Yet, evolution is not part of the medical curriculum of most universities and what is more, most medical students and doctors have just "never heard of it". At second glance, however, this is not surprising.

Until recently, most evolutionary medicine publications did not really target medical practitioners or were published in evolutionary rather than medical journals. Further, most books on the topic are organized into a structure that reflects evolutionary biology sub-fields which are not familiar to medical doctors (e.g. life history theory, host–parasite co-evolution) rather than sub-fields of medicine (cardiology, oncology, obstetrics). Medicine is highly specialized and already requires a considerable amount of knowledge, and one cannot expect its practitioners to teach themselves the basis of evolutionary biology that are required to dive efficiently into the growing literature of evolutionary medicine, a still secondary discipline to medicine. But this is not the whole story. For those medics who have "heard of it", the relevance of an evolutionary framework for the practice of medicine is yet to be demonstrated. Some have argued that in the consultation room, evolutionary thinking may offer little more than a nice story to tell, but will not fix the broken arm. Are they wrong? Arguably the answer is neither yes nor no, but rather that it depends on the field of specialization, the amount of attention it has received from evolutionary scholars and the type of practical implication that is sought

(communication with the patient, rethinking the hallmarks of a disease, finding new avenues in cancer therapy, etc.). Still, the question of the impact of evolutionary thinking for practice and policy is one to be asked explicitly.

This book, a collection of 23 chapters, is using a number of unique features to tackle the issues outlined above and in so doing, will enable medical doctors to think evolutionarily: (1) It is organized by medical sub-fields: obstetrics, paediatrics, nutrition, cardiology, oncology, immunity, geriatric, psychiatry and psychology. Those sub-fields that are missing are not omissions from the Editors' part, but rather the expression of a lack of evolutionary studies in some particular medical specialties. For some, it has been either impossible (e.g. toxicology, urology, gastroenterology, dermatology) or extremely difficult (e.g. cardiology) to find contributors. (2) At least half of the contributors are M.D. (medical doctors). The other half is composed of anthropologists, psychologists and population health scientists. This leads to different "cultures" in the manner with which the evolutionary approach is used to address medical issues, and we think it illustrates the richness of the applicability of the evolutionary "toolbox" to serve health and medicine. (3) Each chapter contains a lay-summary and a glossary. A special effort has been made to make the content of this book accessible to a lay reader, whether in evolutionary biology or in medicine. (4) Each chapter contains a section "Implications for policy and practice". The authors have been forcefully instructed to provide an answer to that question, however difficult it might be, pointing out whether or not such implications indeed had already emerged and/or the extent to which they were still speculative at this stage. The result is a collection of sections that contain far-reaching implications for contemporary biomedicine and/or brilliant ideas in waiting to be tested. Indeed, the point of the exercise was not to provide a definitive answer or account of an evolutionary approach to a particular medical topic, but rather to challenge the current state of knowledge and provide the reader with a new lens with which to think about health and medicine.

Although this book is first targeted at health practitioners and medical students, its guiding purpose will serve anyone who is keen on finding out about "evolutionary thinking in medicine", what it means and what it has to offer to mainstream biomedicine, be it patients, students, researchers or the general public.

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