

INTRODUCTION AND GUIDE

When I started to assemble the material for this *Collected Works*, my intent was to supplement the written text with some video sequences that illustrate the behavior of living cells and the way we study some of the underlying molecular mechanisms. However, after spending the last few months editing the video material, and wondering how the reader might best approach this volume, it occurred to me that I may have had it all backwards.

Therefore, this volume has been organized to introduce the reader first to the video, and then to the Articles and Appendices as further reading material. While this may depart from the conventional treatment of video material as a supplement, I believe that this revised sequence may be closer to how many of us learn about a subject. I recommend that you first acquire an overview of the volume by viewing the video-taped lecture that I gave in the physiology course at the MBL in the summer of 2006, along with its accompanying PowerPoint presentation, both of which can be found on the **DVD to the Collected Works of Shinya Inoué** included with this book. To activate the DVD properly, start by reading the **DVD Contents**, one copy of which is attached to the DVD while another appears as a chapter in this *Collected Works*.

This volume traces my contribution to science and technology through highlights of my published (and a few hitherto unpublished) articles.* As seen in these chronologically arranged articles, technological advances in microscopy and related fields made by me and my colleagues have often preceded new biological observations and discoveries. However, I hope that this sequence of events is not taken to mean that I had the foresight to see that particular improvisations in image improvements or experimental methods would solve riddles about certain mechanisms in life.

While some biological observations did, in fact, prompt further improvements or development of new methods or instruments, I cannot truly say that much of my interest in technological development was motivated only by my desire to answer specific biological questions. Rather, it reflects my interest in devising new instruments (Appendix I: **Development of the "Shinya Scopes"**), or means for studying living cells in action, and then in using those new devices to *explore* nature. My sense was, and remains, that because living creatures and cells are so full of surprises that defy our *logical* anticipation, it is better to improve the tools for perceiving what nature has to tell us, and then let her show us what questions we can reasonably ask.

Fortunately, what nature has revealed to us, using the instruments and methods that my colleagues and I have devised, turns out to have had significant impact on our understanding of the workings of the dividing cell and its dynamic molecular machinery. Furthermore, I have been privileged to have our efforts, both in biology and instrument development, widely recognized throughout my career. Thus, in addition to appending a **Curriculum Vita** to this volume, including the thesis topics of the

*Due to page limitations agreed to with the publisher, several interesting articles could not be included in this volume. I offer my apologies to my co-authors. I chose those articles not because they were unimportant to the relevant fields, but based on my having played a relatively minor role in the preparation of the article.

PhD students whom I have sponsored, I have taken the liberty to include some remarks made by His Majesty, Emperor Akihito, and by myself relating to the International Prize for Biology which I was honored to receive in December 2003 (Article 73).

For clarity and simplicity, the **Contents** of the articles in this volume gives abbreviated titles only for each entry. Full citations for the articles can be found in the **List of Primary Publications** at the end of this volume. Other sections of this volume, **Development of the "Shinya Scopes,"** as well as the **Slides and Movies** in the PowerPoint presentation and the accompanying **Additional Material**, listed under **DVD Contents**, provide reference to article numbers. Hopefully, they will serve as a functional index for this volume.

Over the years, I owe my debt and gratitude to many persons, family, teachers, students, collaborators, and sponsors, too numerous to list here, who have made my work both productive and enjoyable. A few are listed in passing in the articles in this volume or in the presentations on the DVD. Many also appear in another volume, *Through Yet Another Eye*, which I am currently preparing.

Directly relevant to the preparation of this *Collected Works*, I wish to thank particularly members of the MBL Architectural Dynamics in Living Cells Program including Rudolf Oldenbourg for his generous support; Bob Knudson for speedily translating our conceptual plans into finished precision instruments; Michael and Elena Shribak for improving several of the drawings used; Grant Harris for extended help with the PowerPoint and DVD preparation; and Jane MacNeil who has not only assembled all of the pdf files and polished the typescripts for this volume, but who has kept the preparation of the whole volume on track. As always, my wife Sylvia has supported me with good humor and wisdom.

Shinya Inoue
Canovanas, Puerto Rico
Falmouth, Massachusetts
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