

[Thesis Title]

Thesis by  
[Your Full Name]

In Partial Fulfillment of the Requirements for the  
Degree of  
[Name of Degree]

The logo for the California Institute of Technology (Caltech), featuring the word "Caltech" in a bold, orange, sans-serif font.

CALIFORNIA INSTITUTE OF TECHNOLOGY  
Pasadena, California

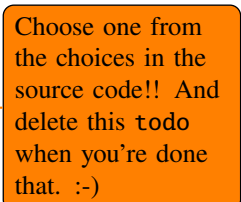
[Year Degree Conferred]  
Defended [Exact Date]

© [Year Degree Conferred]

[Your Full Name]

ORCID: [Author ORCID]

All rights reserved



Choose one from the choices in the source code!! And delete this todo when you're done that. :-)

## ACKNOWLEDGEMENTS

[Add acknowledgements here. If you do not wish to add any to your thesis, you may simply add a blank titled Acknowledgements page.]

## ABSTRACT

[This abstract must provide a succinct and informative condensation of your work. Candidates are welcome to prepare a lengthier abstract for inclusion in the dissertation, and provide a shorter one in the CaltechTHESIS record.]

## PUBLISHED CONTENT AND CONTRIBUTIONS

[Include a bibliography of published articles or other material that are included as part of the thesis. Describe your role with the each article and its contents. Citations must include DOIs or publisher URLs if available electronically.]

If you are incorporating any third-party material in the thesis, including works that you have authored/co-authored but for which you have transferred copyright, you must indicate that permission has been secured to use the material. For example: “Fig. 2 reprinted with permission from the copyright holder, holder name”

Add the option `iknowwhattodo` to this environment to dismiss this message.]

Cahn, J. K. B., A. Baumschlager, S. Brinkmann-Chen, and F. H. Arnold (2016). “Mutations in adenine-binding pockets enhance catalytic properties of NAD (P) H-dependent enzymes”. In: *Protein Engineering Design and Selection* 19.1, pp. 31–38. DOI: [10.1093/protein/gzv057](https://doi.org/10.1093/protein/gzv057).

J.K.B.C participated in the conception of the project, solved and analyzed the crystal structures, prepared the data, and participated in the writing of the manuscript.

Cahn, J. K. B., S. Brinkmann-Chen, T. Spatzal, J. A. Wiig, A. R. Buller, O. Einsle, Y. Hu, M. W. Ribbe, and Arnold F. H. (2015). “Cofactor specificity motifs and the induced fit mechanism in class I ketol-acid reductoisomerases”. In: *Biochemical Journal* 468.3, pp. 475–484. DOI: [10.1042/BJ20150183](https://doi.org/10.1042/BJ20150183).

J.K.B.C participated in the conception of the project, solved and analyzed the crystal structures, prepared the data, and participated in the writing of the manuscript.

## TABLE OF CONTENTS

Acknowledgements . . . . .	iii
Abstract . . . . .	iv
Published Content and Contributions . . . . .	v
Table of Contents . . . . .	v
List of Illustrations . . . . .	vii
List of Tables . . . . .	viii
Nomenclature . . . . .	ix
Chapter I: Introduction . . . . .	1
1.1 This is a Section . . . . .	1
1.2 This is Another Section . . . . .	3
Chapter II: This is the Second Chapter . . . . .	4
Chapter III: This is the Third Chapter . . . . .	5
Chapter IV: This is the Fourth Chapter . . . . .	6
Chapter V: This is the Fifth Chapter . . . . .	7
Chapter VI: This is the Sixth Chapter . . . . .	8
Chapter VII: This is the Seventh Chapter . . . . .	9
Chapter VIII: This is the Eighth Chapter . . . . .	10
Bibliography . . . . .	11
Appendix A: Questionnaire . . . . .	12
Appendix B: Consent Form . . . . .	13
Pocket Material: Map of Case Study Solar Systems	

## LIST OF ILLUSTRATIONS

<i>Number</i>		<i>Page</i>
1.1	This is a figure . . . . .	2

LIST OF TABLES

<i>Number</i>		<i>Page</i>
1.1	This is a table . . . . .	2



## NOMENCLATURE

**Asteroid.** A very small planet ranging from 1,000 km to less than one km in diameter. Asteroids are found commonly around other larger planets.

**Galaxy.** A system of stars independent from all other systems.

*Chapter 1*

## INTRODUCTION

Start off all chapters with `chapter`. `\extrachapter` will give you an unnumbered chapter that's added to the Table of Contents.

Here's an example of a citation (Goresky and MacPherson, 1981). Here's another (Parusiński and Pragacz, 1998). These will appear in the big bibliography at the end of the thesis.

If you're new to  $\text{\LaTeX}$  and would like to begin by learning the basics, please see our free online course available at:

<https://www.overleaf.com/latex/learn/free-online-introduction-to-latex-part-1>

You can define nomenclatures as you talk about key terms in your thesis. So what's a galaxy?

**1.1 This is a Section**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et

magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

# Caltech

Figure 1.1: This is a figure

## This is a subsection

Area	Count
North	100
South	200
East	80
West	140

Table 1.1: This is a table

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus

dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.

Here's an endnote.<sup>1</sup>

## 1.2 This is Another Section

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

*Chapter 2*

## THIS IS THE SECOND CHAPTER

If you'd like to have separate bibliographies at the end of each chapter, put a `refsection` around the material of each chapter, then cite as usual – e.g. (Goresky and MacPherson, 1981; Fulton, 1983). Then do a `\printbibliography` just before the `refsection` ends.

**References**

- Fulton, William (1983). “Introduction to intersection theory in algebraic geometry”. In: *Regional Conference Series in Mathematics*. 54.
- Goresky, Mark and Robert MacPherson (1981). “On the topology of complex algebraic maps”. In: *Algebraic Geometry Proceedings, La Rábida, Lecture Notes in Mathematics*. 961.

*Chapter 3*

## THIS IS THE THIRD CHAPTER

Cahn, J. K. B., S. Brinkmann-Chen, T. Spatzal, J. A. Wiig, A. R. Buller, O. Einsle, Y. Hu, M. W. Ribbe, and Arnold F. H. (2015). “Cofactor specificity motifs and the induced fit mechanism in class I ketol-acid reductoisomerases”. In: *Biochemical Journal* 468.3, pp. 475–484. DOI: 10.1042/BJ20150183.

[You can have chapters that were published as part of your thesis. The text style of the body should be single column, as it was submitted to the publisher, not formatted as the publisher did.]

*Chapter 4*

THIS IS THE FOURTH CHAPTER

*Chapter 5*

THIS IS THE FIFTH CHAPTER



*Chapter 6*

THIS IS THE SIXTH CHAPTER

*Chapter 7*

THIS IS THE SEVENTH CHAPTER

*Chapter 8*

THIS IS THE EIGHTH CHAPTER

## BIBLIOGRAPHY

- Goresky, Mark and Robert MacPherson (1981). “On the topology of complex algebraic maps”. In: *Algebraic Geometry Proceedings, La Rábida, Lecture Notes in Mathematics*. 961.
- Parusiński, Adam and Piotr Pragacz (Jan. 1998). “Characteristic classes of hypersurfaces and characteristic cycles”. preprint.

*Appendix A*

QUESTIONNAIRE

*Appendix B*

CONSENT FORM

## INDEX

### B

bibliography, 1  
by chapter, 4

### C

chapter  
numbered, 1  
unnumbered, 1

### F

figures, 2

### L

L<sup>A</sup>T<sub>E</sub>X, 1

### N

nomenclature, 1

### T

tables, 2

<sup>1</sup>Endnotes are notes that you can use to explain text in a document.



POCKET MATERIAL: MAP OF CASE STUDY SOLAR  
SYSTEMS