

UNIVERSITY OF ILLINOIS AT CHICAGO

DOCTORAL THESIS

Devices for Biological Systems: On-Chip Horizontal Gene Transfer and 3D-Printed Microfluidic Applications

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*A thesis submitted in fulfilment of the requirements
for the degree of Doctor of Philosophy in Bioengineering*

in the

Eddington Lab

Department of Bioengineering

March 2017

Declaration of Authorship

I, Martin D. BRENNAN, declare that this thesis titled, 'Devices for Biological Systems: On-Chip Horizontal Gene Transfer and 3D-Printed Microfluidic Applications' and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

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“Thanks to my solid academic training, today I can write hundreds of words on virtually any topic without possessing a shred of information, which is how I got a good job in journalism.”

Dave Barry

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Abstract

Faculty Name

Department of Bioengineering

Doctor of Philosophy in Bioengineering

**Devices for Biological Systems: On-Chip Horizontal Gene Transfer and
3D-Printed Microfluidic Applications**

by Martin D. BRENNAN

The Thesis Abstract is written here. The page is kept centered vertically so can expand into the blank space above the title too...

This is a test

Acknowledgements

The acknowledgements and the people to thank go here, don't forget to include your project advisor...

Contents

Declaration of Authorship	i
Abstract	iii
Acknowledgements	iv
Contents	v
List of Figures	vi
List of Tables	vii
Abbreviations	viii
Physical Constants	ix
Symbols	x
1 Introduction and Background	1
1.1 Main Section 1	1
1.1.1 Subsection 1	1
1.1.2 Subsection 2	1
1.2 Main Section 2	2
2 Materials and Methods	3
2.1 Main Section 1	3
2.1.1 Subsection 1	3
2.1.2 Subsection 2	3
2.2 Main Section 2	4
3 Results	5
3.1 Main Section 1	5
3.1.1 Subsection 1	5
3.1.2 Subsection 2	5
3.2 Main Section 2	6

4	Discussion	7
4.1	Main Section 1	7
4.1.1	Subsection 1	7
4.1.2	Subsection 2	7
4.2	Main Section 2	8
A	Appendix Title Here	9
	Bibliography	10

List of Figures

List of Tables

Abbreviations

LAH List Abbreviations **Here**

Physical Constants

Speed of Light $c = 2.997\,924\,58 \times 10^8 \text{ ms}^{-\text{s}}$ (exact)

Symbols

a	distance	m
P	power	W (Js^{-1})
ω	angular frequency	rads^{-1}

For/Dedicated to/To my...

Chapter 1

Introduction and Background

1.1 Main Section 1

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Chapter 2

Materials and Methods

2.1 Main Section 1

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Chapter 3

Results

3.1 Main Section 1

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Chapter 4

Discussion

4.1 Main Section 1

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Appendix A

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Bibliography