

# Mark Varley

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## Profile

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I am a first year Cambridge PhD Engineering student. My project is titled *Development of a Bioreactor System for Production of Clinically Relevant Volumes of Bone and Joint Tissue*, supervised by Dr Athina Markaki and Dr Roger Brookes.

## Education

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2012 – Present: **University of Cambridge – PhD in engineering**

Working on the design of a novel bioreactor system for producing clinically relevant volumes of bone and joint tissue.

2008 – 2012: **University of Cambridge – MEng in Engineering**

Achieved a Merit in my finals under the area of engineering for the life sciences.

2001 – 2008: **Altrincham Grammar School for Boys – A Levels**

Maths A (96%)

Further Maths A (96%)

Biology A (100%)

Chemistry A (95%)

Physics A (99%)

General Studies A (95%)

Further Additional Maths AS A (86%)

## Work Experience

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2012 – 9 week Lab Research:

### Research Technician at St. Georges Hospital

- Working within the Derek Macallan group in the division of Clinical Sciences.
- Refining and maximising sensitivity of some of the protocols used within the lab environment.

2011 – 10 week Research Placement:

### Engineering UROP,

- Working in a biological research lab on a DNA labelling technique.
- Collaborating with engineers, mass spec technicians and biological researchers to try and optimize the techniques that are being used.
- Generating new computer models and designs that can give a new and greater insight into what is happening on a cellular level.

2009 – 10 week Placement:

### Sabre Instrument Valves

- Working individually and part of the shop floor in the construction and testing of valves for the oil industry. Design development of new valves.
- Checking and editing technical drawings in pro-engineer.
- Construction of dental implants and operation of heavy machinery.

2008 – Summer Placement:

### Talacre Beach Caravan Park (now renamed Plas-Coch Holiday Home Park)

- Groundsman, general duties.

## Achievements & Interests

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2012 – 2013: **Queens' College Boat Club Men's Captain**

- The organisation and running of the Men's rowing squad at Queens'
- Interface between the students, alumni and college.

- 2011 – 2012: **Cambridge University Lightweights Honorary Secretary**
- Organisation, set up and umpiring of the major CUCBC events including Bumps.
  - Financial management of the lightweight squad.
  - Organisation and leading of executive committee meetings.
- 2010 – 2011: **President of Cambridge University Rugby League**
- Organisation of team and training sessions with coaches for up to 25 players.
  - Assisting coach with external sponsors and interested parties. Organising the varsity match shown live on Sky Sports each year.
- 2009 – 2010: **Lower Boats Captain Queens' College Boat Club**
- Coaching and setting training plans for various boats.
  - Teaching over 50 people a new sport.
  - Appreciate what gets the best out of different people and communicate to people from a huge variability of background.
- 2007 – 2008: **Senior Prefect and School Council Member**
- 2006 – 2007: **Secretary of Young Enterprise Team**
- Developed a cook book and 3D learning aids resulting in a profit of over £2,500.
  - Came 1<sup>st</sup> in area heats and won best customer service at regional level.

Other than these positions of responsibility in the last few years some of my interests currently being pursued are:

- Computational biology in particular looking at modelling cell proliferation of lymphocytes and looking at different methods and how accurate they are.
- Organised a 24 hour memorial erg in memory of one of the boat club members raising in excess of £1800.
- Recently ran my first marathon and first triathlon.
- Achieved club colours for the Cambridge University Lightweight Rowing club.
- Rowing for Queens' College 1<sup>st</sup> Boat winning many races and being one of the top 5 crews on the river. I have rowed for the last 4 years and have also coached from novice to first boat standard.
- Achieved half-blue status in Rugby League for the University of Cambridge.
- Played Rugby Union at both College and University Level.
- Enjoy travelling and hiking including spending 6 weeks backpacking in Vietnam and Borneo in the summer of 2010.
- Student membership to both the IPEM, (Institute of Physics and Engineering in Medicine) and IMech.

## Skills

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- Program in C++
  - Wrote Software to land a Mars Lander probe in a simulation system.
- Experienced in using MATLAB and Octave
  - Written computer simulations using random number generators to predict outcomes.
  - Written multiple optimization algorithms for different uses.
  - Written lumped mass model to work out vibration response of a helicopter blade.
- CAD experience with Pro-Engineer, Auto-Cad
  - Designing a Centre console to be designed for a new type of car.
  - Designed body work of a "Volkswagen Beetle"
- Finite Element package experience using Comsol and Abacus
  - Finite Element analysis of helicopter rotor blade.
  - Finite Element analysis of a water valve and plate with a hole in it.
- Experienced in Powermill
  - Design and optimization of machining strategies for design of a Sat-Nav Prototype.
  - In order to get sufficient surface finishes while still meeting machining time requirements.
- Experienced in working in a category 2 biological research lab, working with live cells and derivitization chemistry.
- Experienced user of Agilent Mass Spectrometer machines and their required maintenance when necessary.