

1st QTB PBR Hack`a'thing

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Program

Resources - Materials, Designs and Ideas

- [HACKATHON CODE & MANUALS](#)
- [DIY Bioreactors](#)
- [DIY Robotics - Motors](#)
- [3D Printed Labware](#)
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Awards

Projects

Materials

Program

time	event
March 2, <12:00	Building Bioreactors: talks by Dougie, Rob, Avantes, CellDeg
March 2, >13:00	Hands-on introductions to existing tools; organization into teams
March 3	Hardware I: soldering, tubing & 3D printing Software I: probe/sensor/pump arduino/raspi interfaces; Visit HHU's fine mechanics and glas blower work-shops
March 4	Hardware II: integrate projects into DIY or PSI reactors Software II: arduino/raspi master/server interface Brain storming: relation of data and models and beer

Resources - Materials, Designs and Ideas

HACKATHON CODE & MANUALS

[The hacka'thing's code repo at the HHU git](#)

DIY Bioreactors

- [Open source DIY bioreactor](#) and its [code on github](#)
- Github project for [Arduino-controlled bioreactor](#)
- [Onlinebioreactor](#): Arduino wiring schematics and source code for a temperature and pH measurements of a bioreactor
- An [Algae Bioreactor from Recycled Water Bottles](#)
- Google Group: [DIY Bioreactor and Bioreactor controller](#)
- [Jun lab's Mother Machine](#): *E.coli* single cell growth dynamics
- [Pelling lab's CO2 incubator](#): for mammalian cell culture
- [Cronin lab's repository for 3D printed reaction ware](#): micro- and millifluidics, OD probes, etc.
- [Biomonstaaar](#): PBR instructable, and [spacegambit project proposal](#)
- [Openbioreacteurs](#): DIY algae reactors

DIY Robotics - Motors

- [DIY Peristaltic Pump with arduino motor shield](#): instructions
- [DIY Peristaltic Pump with Toshiba TA7291P motor controller](#): "instructable"
- [3D printed peristaltic pump with steel rollers](#) for 28BYJ48 5V stepper motors (ULN2003 chip), [arduino code](#)
- [3D printed peristaltic pump for Nema17 stepper motors](#)
- [DIY Syringe Pump](#): plastic manual syringe attached to arduino-controlled stepper motor, [code and 3D printer files on github](#)
- [Stepper motor with arduino motor shield](#): youtube video
- [Very simple stepper motor](#): stepper mode operated via ULN2003 chip; mighty cheap, [4 motors+chip at ebay](#)
- [Stepper Motor Basics for Arduino](#): a great and detailed review
- [Stepper motor via arduino video tutorial](#)

3D Printed Labware

- Tsuda *et al.* *PLoS ONE* 2015: [3D Printed 'Plug and Play' Millifluidic Devices](#): incl. an OD probe, which may "be adapted with the right LED and detector to Photosystem stuff and CO2/ethanol IR detection" (DBM)
- Lücking *et al.* *Eng. Life Sci.* 2015: [3D printed labware](#), incl. "well plate with different baffle geometries, shake flask cap with built-in luer connections, and filter holder for an in-house developed membrane reactor system"; also see paper by Büchs group on baffle geometries
- Baden *et al.* *PLoS ONE* 2015: [Open Labware: 3-D Printing Your Own Lab Equipment](#)
- Cronin lab's repository for [3D printed reaction ware](#) (micro- and millifluidics, OD probes, etc.)
- Kitson *et al.* *Cryst. Growth Des.* 2014: [3D printed crystal structures \(from PDB\)](#)
- Autoclavable materials for 3D printing? [reddit discussion w links](#); however, [3D printed material gets sterilized](#)
- [OpenFuge](#): DIY centrifuge

Designs & Instructions

- [Arduino Playground](#): Wiki for Arduino-based Designs
- [Instructables](#): Diverse DIY Designs
- [Hackaday](#): Diverse DIY Designs
- [Thingiverse](#): 3D Printer Designs

Shops

- [Conrad](#): online and offline shop, DE
- [Reichelt](#): online shop, DE
- [Elecrow](#): online shop, China
- [Adafruit](#): online shop, USA
- [Fasttech](#): online shop, China
- [SainSmart](#): online shop
- [AliExpress](#): online shop, China
- [Sparkfun](#): online shop, USA

Awards

- The [Fastest Arduino Fry](#) Award: for the first to unwittingly fry an Arduino or else
- The [Prettiest Arduino Fry](#) Award: the winning idea will be celebrated in a ritual Arduino sacrifice during the closing ceremony; find inspiration at [youtube](#)
- The SolderingIron: red, green and blue
- Should it be making that sound?
- Ada Lovelace: Algorithm & Combinatorics
- The Bureaucrat
- The DumpsterDIVER
- The SkeuomorphER
- The TroubleshootER
- The Flash

Projects

1. [Gas`o'meter](#)
2. Light Flux
3. Liquid Flux
4. The Server
5. Heat Flux
6. The Kaiten Eppi
7. Microfluidics Device

Materials