Starting a 3-D printing program "on the cheap"

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Overview

- Why do you want a 3-D printer?
- What are your intended uses for prints?
- What are your expectations?
- How much money can you spend?
- Who will run the printer/software?
- Where will the printer be located?
- What resources are already available at your institution?

Why do you want a 3-D printer?

- Because it's cool!
- Better understanding of normal anatomy
- Better understanding of complex anatomy
- Trainee education
- Patient/family education
- Case preparation
- Device design
- Good PR

What are your intended uses for prints?

- Education
  - Trainees
  - Patients/families
- Diagnostics
  - Few, if any, are FDA approved for this
- Procedural planning
  - Surgery or cath
- Device design
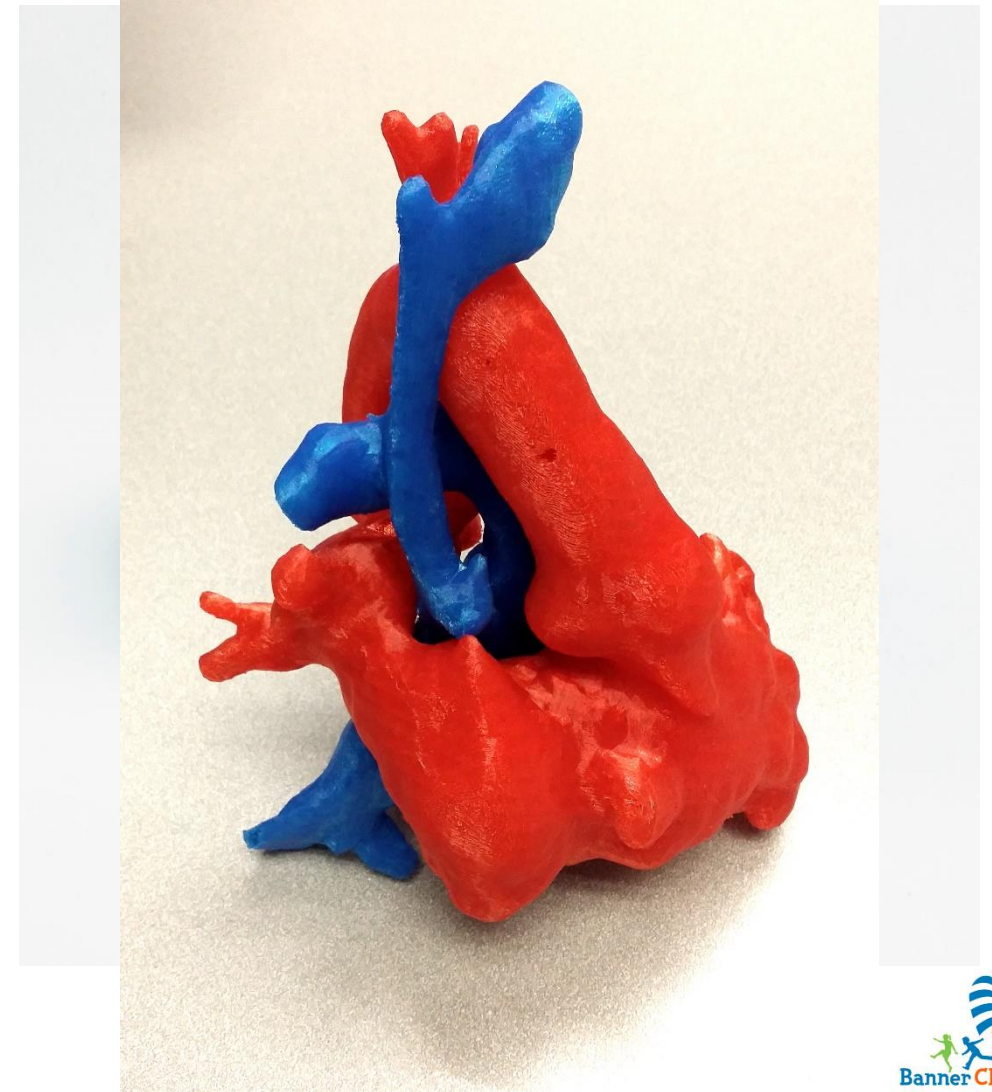
https://3dprinter.dremel.com/sites/default/files/3d-model/AJ%203-4_Blue.jpg
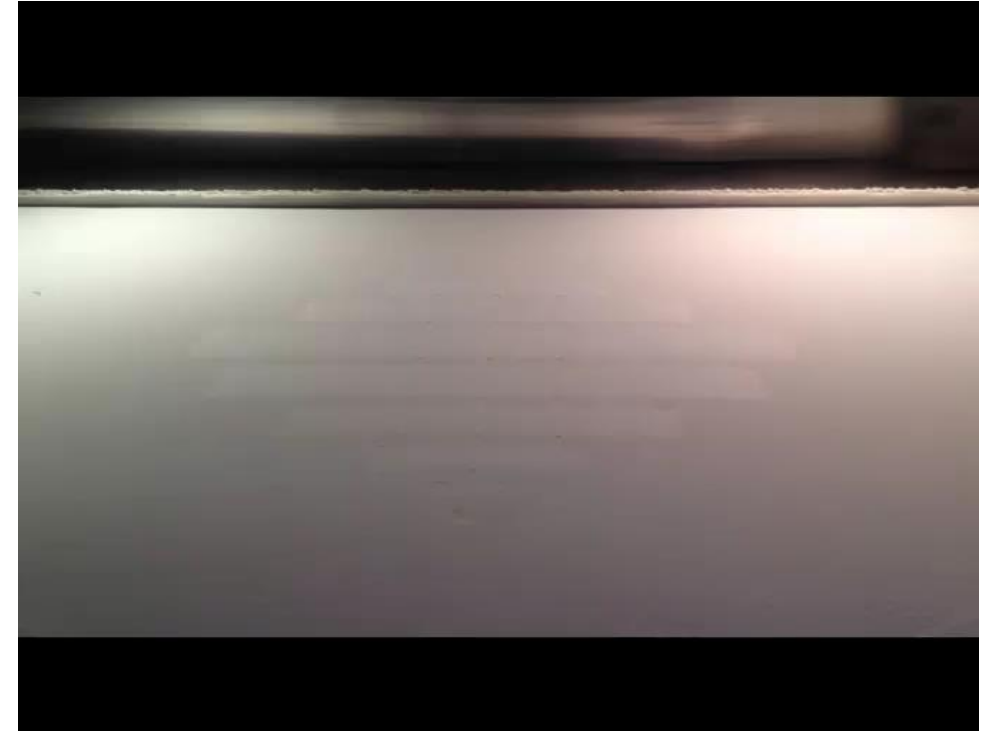
What are your expectations?

- Print quality
- Size of models
- Print time
- Print material

How much money can you spend?

- FDM $300 – 4,000
  - PLA/ABS
  - Plug and play
  - Kit

- SLA $3,000 – 4,000
  - Resin

- SLS $100,000 – 500,000 ($10,000)
  - Powder

3D Hubs 3D Printer Guide
https://www.3dhubs.com/best-3d-printer-guide

Who will run the printer/software?

- Dedicated bioengineer
  - Bioengineering students
- CT/MRI technician
- Trainees
- You??

Where will the printer be located?

- Size
- Tocixity
  - ABS release significantly high levels of particulates and carcinogens
  - PLA appears to be safe
- Noise level
- Dust, temperature control, etc.

What resources are available?

- Already have a printer??
- Already have software??
- Personnel
- Physical space for printer
- Funds for purchasing
- Grants for purchasing
- Skilled radiologists in CHD

How I did it "on the cheap"

Step	Cost

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Lots of reading	Free

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Purchasing (cheap) software (Simplify3D)	-$150

Recap

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Thanks!