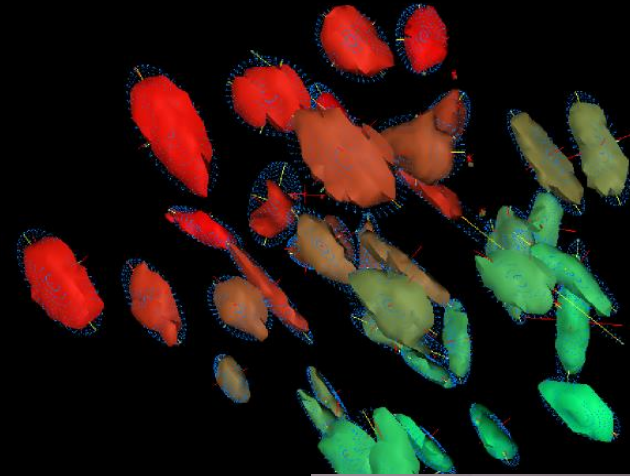
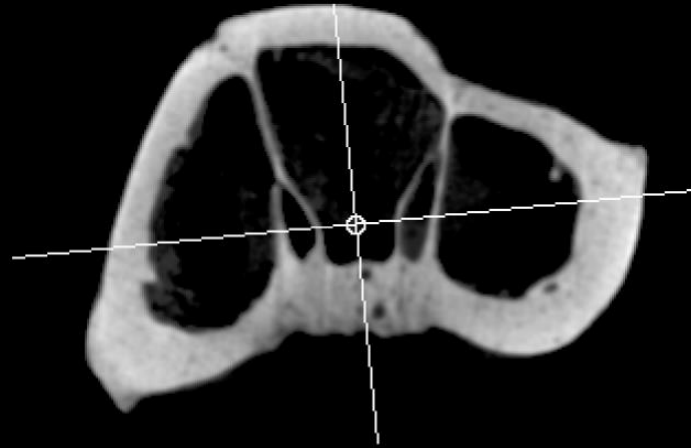
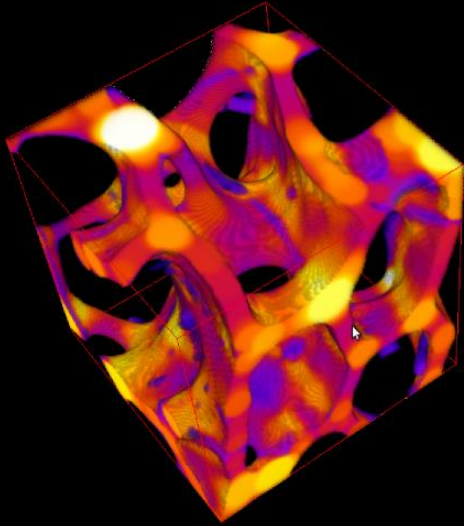


BoneJ

Michael Doube, RVC



- Analysis of bone images in ImageJ
- In use around the world
 - 35,000+ downloads, 600+ citations
- Supported by online docs and forum
- Dedicated research software engineer



Doube M et al., BoneJ: free and extensible bone image analysis in ImageJ. *Bone* 47:1076-9 (2010)

Bone allometry

- Change in proportions with change in size
- Whole bones & trabecular bone
- Related to gait kinematics

Doube M, et al. Three-dimensional geometric analysis of felid limb bone allometry.
PLoS ONE (2009)

Doube M, et al. Trabecular bone scales allometrically in mammals and birds.
Proc Roy Soc B (2011)

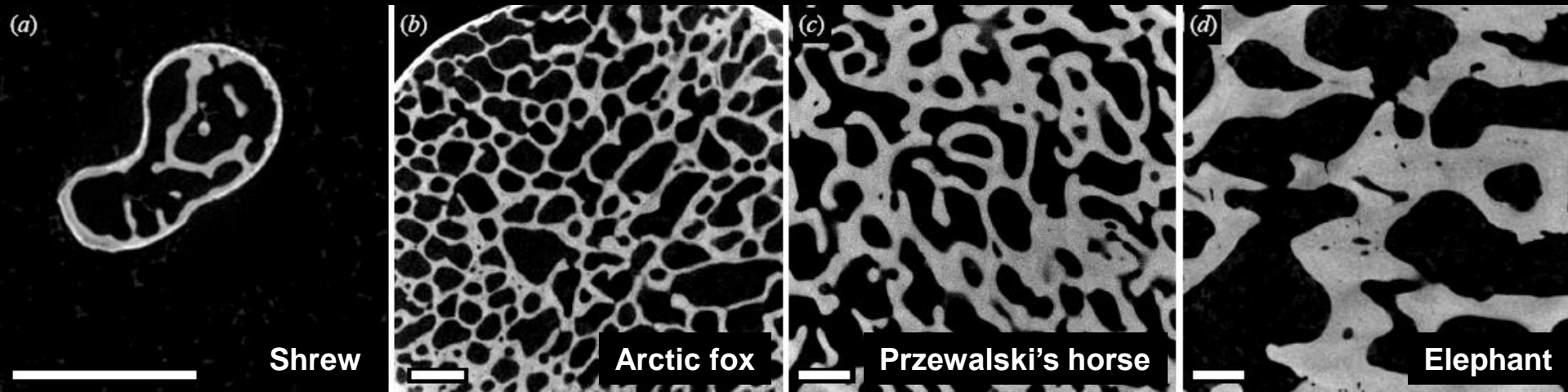
Doube M, et al. Whole-bone scaling of the avian pelvic limb. *J Anat* (2012)



Wikipedia



Wikipedia



Shrew

Arctic fox

Przewalski's horse

Elephant

Project strategy

- Scientist-written, badly designed code
- Lots of advice from ImageJ community
- Guessed there may be a user need
- Needed credit to get the next job!
- Published
 - User-friendly download & docs at bonej.org
 - Code at Github & in JAR package
 - Paper describing BoneJ, in BONE
 - Twitter handle @bonej_
- c.f. old-school hoarding of technical advantage
 - Publish or perish for the 21st century?

bonej.org

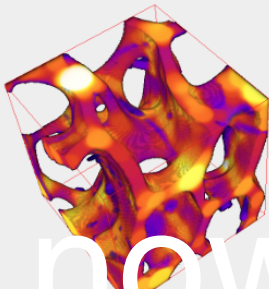
BoneJ

BoneJ is a plugin for bone image analysis in [ImageJ](#). It provides free, open source tools for trabecular geometry and whole bone shape analysis.

BoneJ has secured funding from the Wellcome Trust for its next phase of development. Please tell us what you want to see with the [BoneJ community survey](#).

Development on BoneJ started for a number of practical and ethical reasons:

- Our images are big (several gigabytes). Other software crashed when we tried to load more than 600MB.
- Other software failed to open even our small images. ImageJ opens a huge range of image formats.
- Some things we wanted to do were not implemented in other software.
- Or when they were implemented, code could not be extended. We didn't want a black box sitting in the middle of our experiments. BoneJ is open source (the source is in Technical Note.jar), so you can see where your results come from.



Publish!

And now for
 source
 Publish!
 old-f

BoneJ: Free and extensible bone image analysis in ImageJ

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ABSTRACT

Bone geometry is commonly measured in computed tomographic (CT) and X-ray microtomographic (μCT) images. We obtained datasets of μCT and synchrotron μCT images of bones from diverse species that needed to be analysed remote from scanning hardware, but found that available software solutions were expensive, inflexible or methodologically opaque. We implemented standard bone measurements in a novel ImageJ plugin, BoneJ, with which we analysed trabecular bone, whole bones and osteocyte lacunae. BoneJ is open source and free for anyone to download, use, modify and distribute.

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Branch: master

Commits on Sep 13, 2016

- BoneJ version 1.4.2**
mdoube committed on 13 Sep 2016
- SliceGeometry: fix some warnings (@Override, variable hiding)**
mdoube committed on 13 Sep 2016
- Moments: echo some debug info about 2D axis drawing to the log window**
mdoube committed on 17 Jun 2016
- Merge branch 'slice-geometry' into pre-release**
mdoube committed on 13 Sep 2016

watch 1 star Fork

Publish!

The future: BoneJ2

- Wellcome Trust-funded RSE (until 2018)
- Complete rewrite for ImageJ2 / Java 8
- Proper engineering
 - Testing (JUnit)
 - Continuous integration (Travis CI)
 - Build dependencies (Maven)
 - Cleaner ‘coderly’ code
- **BUT:**
 - User growth & changing roles threaten long-term support.



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BoneJ2 - the next gen version of BoneJ in development

Edit

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Branch: master

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rimadoma Remove javadoc

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.travis	WIP: Switch from Jenkins to Travis CI	12 days ago
IntegrationTestLogs	Perform IT	4 months ago
Legacy	WIP: Switch from Jenkins to Travis CI	12 days ago
Modern	Remove javadoc	17 hours ago
.gitignore	Fix POMs for build	2 years ago
.travis.yml	Fix Travis CI configuration	8 days ago
IJinstall.sh	Add installation scripts	8 months ago
IJinstall_naughty.sh	Add installation scripts	8 months ago
LICENCE	Change to BSD-2 licence	8 months ago
README.md	Update build status badge (switch to Travis)	7 days ago
pom.xml	WIP: Do not build the Legacy subtree by default	12 days ago

README.md

BoneJ2

BoneJ2 - the next gen version of BoneJ for ImageJ2 in development



Skeletal Biology Group @ RVC