µCT at the Institute of Anatomy

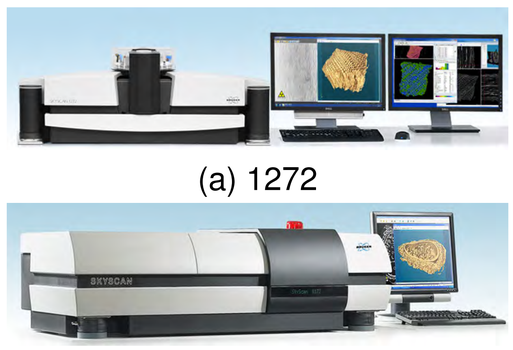
David Haberthür[1], Ruslan Hlushchuk[1] and Valentin Djonov[1]

[1]Institute of Anatomy, University of Bern, Switzerland

{haberthuer,hlushchuk,djonov}@ana.unibe.ch

Introduction

At the Institute of Anatomy of the University of Bern we have a µCT facility including two µCT machines; the SkyScan 1272 and 1172 (Bruker microCT, Kontich, Belgium, Fig. 1(b)).



(a) 1272

(b) 1172

Figure 1: *SkyScan machines [1]*

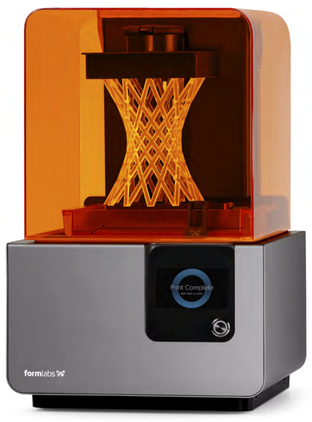


Figure 2: *Form 2 3D printer [2]*

This poster aims to introduce the µCT facility at our institute and gives an overview over the capabilities and the scientific potential of the methodology. Additionally, we also have a high-quality, stereolithographic 3D printer (Formlabs Form 2, shown in Fig. 2) in our lab, which helps us to produce custom-made sample holders suited for scanning samples in wet and dry environment.

Materials and Methods

We investigated different organs or entire lab animals, including zebrafish, mice, rats and mini pig.

Results

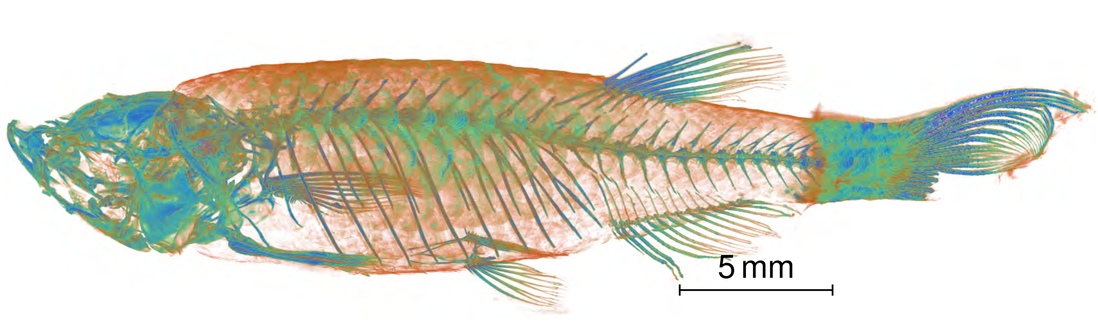
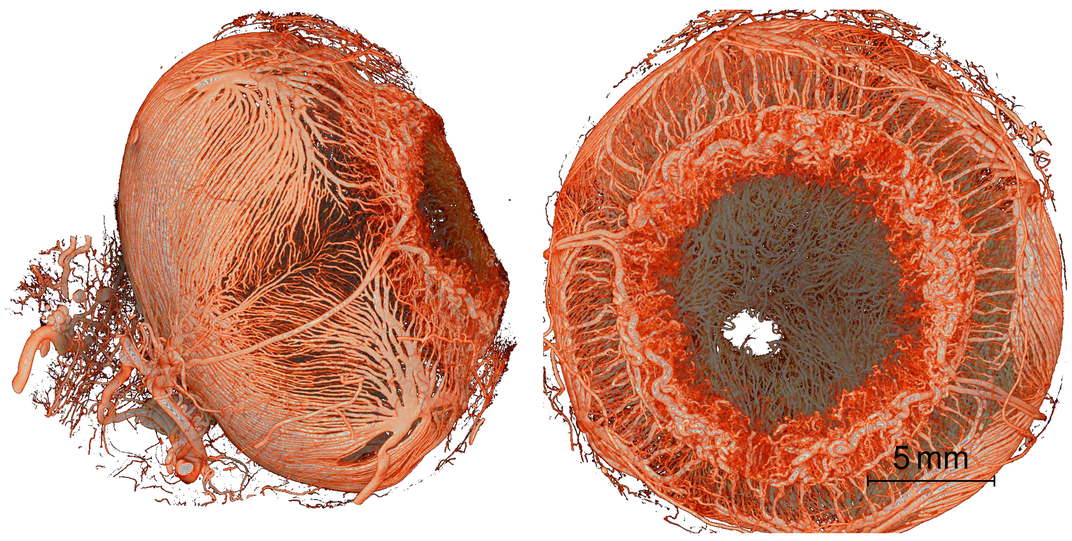
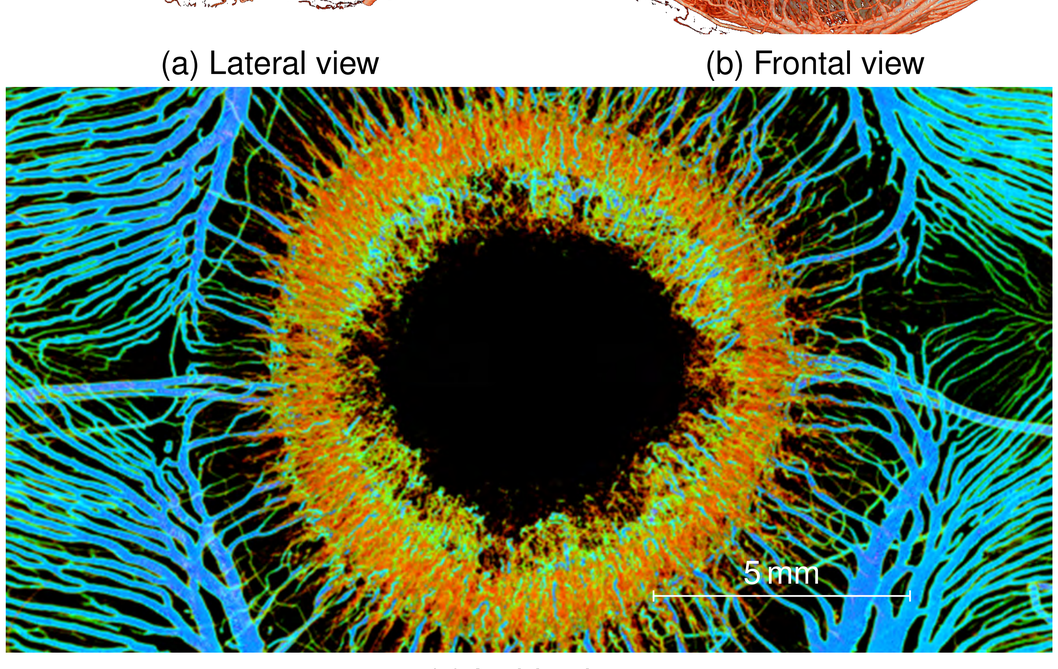


Figure 3: *Visualization of a tomographic scan of a zebrafish, fixed in 4 % PFA.*



(a) Lateral view

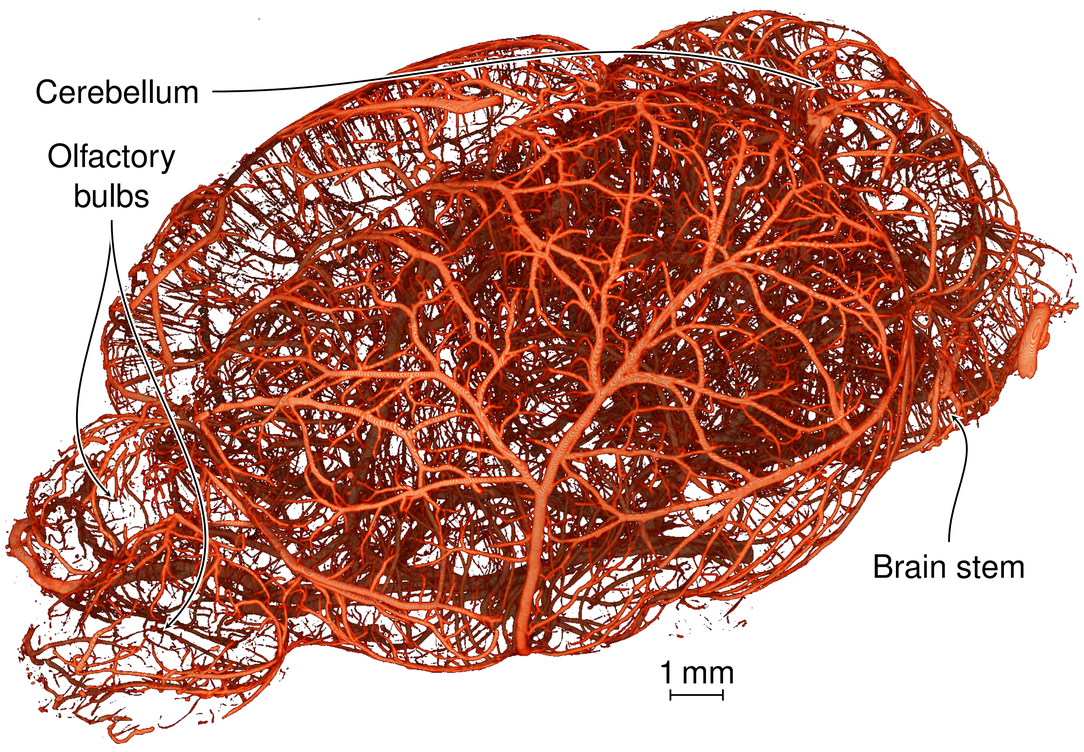
(b) Frontal view



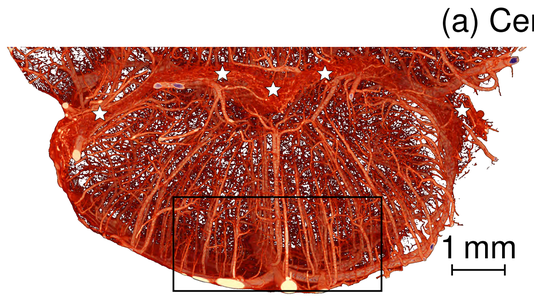
(c) Inside view

Figure 4: *Visualization of a µAngiofil-infused mini pig eye.*

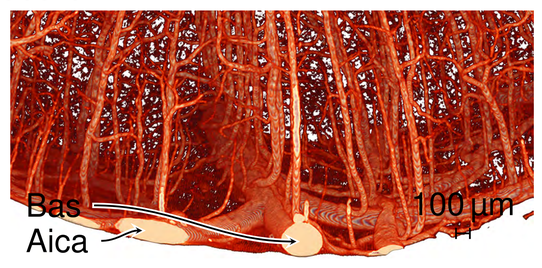
Results (continued)



(a) Cerebellum

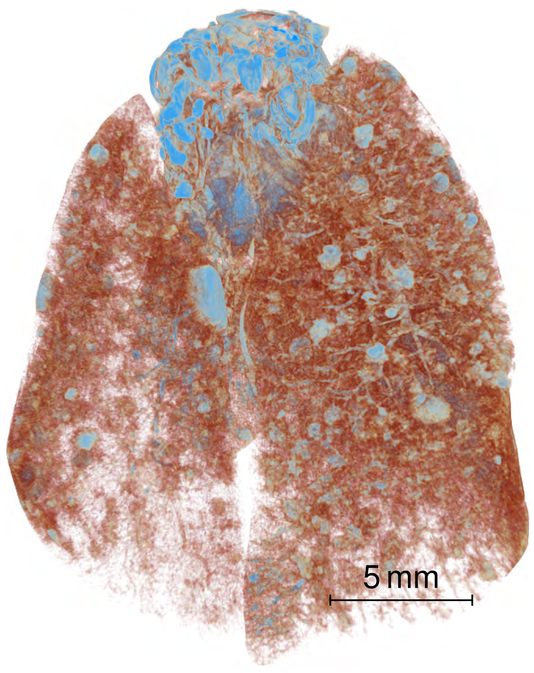


(b) Detail. ☆: Plexus choroideus

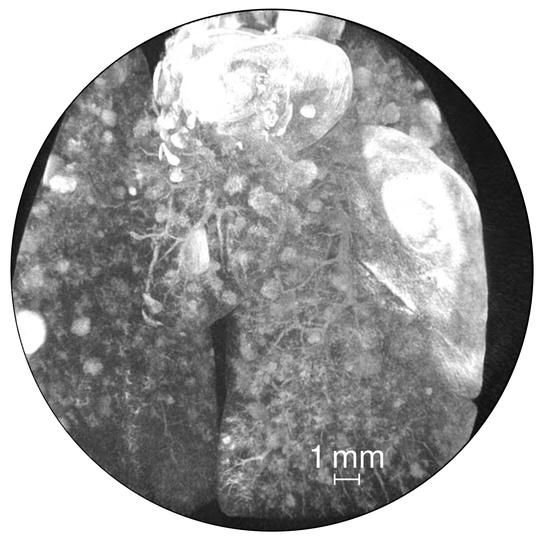


(c) Rectangle in subfigure (b)

Figure 5: *Three-dimensional visualizations of µAngiofil-filled mouse brain.*



(a) 3D Visualization



(b) Maximum intensity projection

Figure 6: *Visualization and quantification of number, size and distribution of lung metastases. Tomographic scan of an Durcupan-embedded mouse lung.*

Discussion

µCT is a powerful tool to gain insight into a broad kind of biological (and non-biological) samples. The new agent (µAngiofil) shows excellent perfusion efficacy and continuous filling of the vascular and capillary bed. The µangioCT-based morphometry protocols are superior to the time-consuming classical, histology-based morphometry. The high reproducibility combined with the aforementioned features makes µangioCT with µAngiofil a reliable partner in a very broad spectrum of basic research studies and clinically-oriented research.

Acknowledgments

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References

[1] *Bruker microCT Products*. URL: http://bruker-microct.com/products/all_products.htm (visited on 08/22/2016).

[2] *Formlabs Press Kit*. URL: http://formlabs.com/company/press/ (visited on 08/22/2016).