

## DEAR COLLEAGUE,

It seems we often discuss conference news in this space – the conference we attended or plan to attend. Instead, we are now thinking about how many we know that might be working on the front lines against this virus, or doing their part by staying at home. How many may have been ill, or had sick family?

Our “doctors” (physicists or chemists) help best by avoiding large gatherings. Unfortunately, that means we will not be attending conferences this summer. We will miss seeing you in person. We hope you are safe and well.

David and Judy Doty

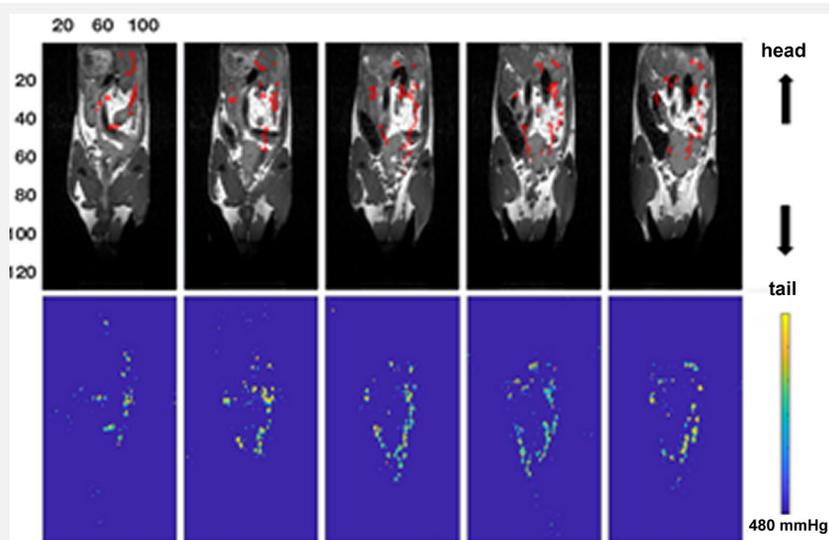
In light of the upcoming ISMRM, this newsletter is directed to our MRI friends

## IN THIS ISSUE:

- Customer Results:  $^{19}\text{F}$  Whole Mouse Images Using a Doty H/F MRI RF Volume Coil
- Doty MRI Preclinical Coils, Large or Small: Volume Coils, Surface Coils, and Curved Surface Coils
- New Faces at Doty Scientific

## $^1\text{H}/^{19}\text{F}$ MRI Dual Frequency RF Litzcage Volume Coil Results

### Mouse Images Obtained with a Doty $^1\text{H}/^{19}\text{F}$ Volume Coil



Spatiotemporal in vivo  $\text{pO}_2$  tracking and clustering of biomaterial implants in mouse.

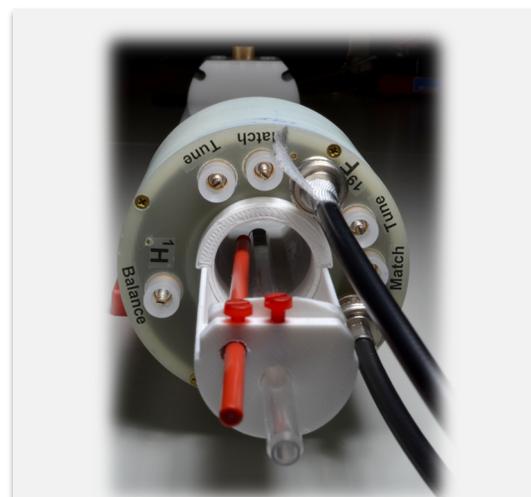
**Top:** in vivo slice-by-slice fused MRI images, collected with 7 T Doty H/F module, of fluorocapsule distribution ( $^{19}\text{F}$ -MRI, red) and soft tissue anatomy ( $^1\text{H}$ -MRI, grayscale) at day 1 postimplantation for 1.5 mm fluorocapsules implanted in a healthy mouse.

**Bottom:** Calculated  $\text{pO}_2$  spatial color maps (brighter colors correspond to decreased  $\text{pO}_2$ ).

Spanoudaki V, Doloff JC, Huang W, Norcross SR, Farah S, Langer R, Anderson DG. **Simultaneous spatiotemporal tracking and oxygen sensing of transient implants in vivo using hot-spot MRI and machine learning.** Proc Natl Acad Sci U S A. 2019 Mar 12; 116(11):4861-4870.

### A Simple-tune Preclinical $^1\text{H}/^{19}\text{F}$ RF Resonator for MR Imaging

- ✓ *Efficient, easy to tune and match over a broad range of sample loading.*
- ✓ *Each channel for TxRx and linearly polarized.*
- ✓ *For observe / decouple - with both channels used simultaneously.*
- ✓ *For interleaved acquisitions - with each channel used sequentially.*
- ✓ *Robust design and mechanical stability.*



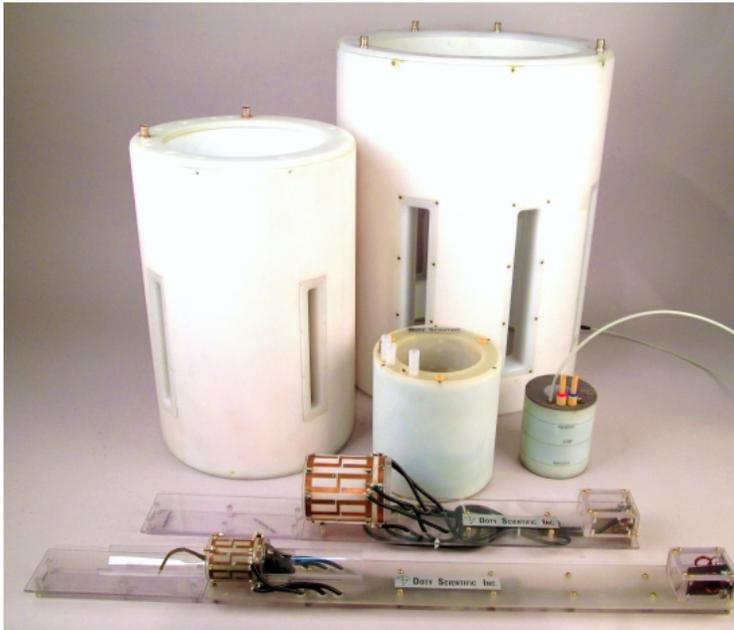
A Doty  $^1\text{H}/^{19}\text{F}$  Dual Frequency 32 mm Litzcage module. Shown with user incorporated animal bed.

## Doty MRI Preclinical Coils, Large or Small

Doty Scientific has developed rf imaging coils that are truly unique. Simple-tune Litz and Litzcage\* coils provide extraordinary homogeneity and unmatched S/N.

**Any of these coils may be made dual-frequency ( $^1H/ff$ ), where  $ff$  is a fixed frequency.**

Doty imaging coils are supplied in different packaging for several applications.



*Pictured: MRI RF Volume Coils with integrated shields and Small Animal Imaging Platforms (SAIP) with RF volume coils mounted on animal beds (with a removable shield - not shown.)*

*\*\*The Litz coil is a linear coil, while the Litzcage coil is quadrature. Some have thought that Doty Litz or Litzcage coils are made with litz wire. That is not the case. An old meaning of the word litz is woven. The coils, with the Doty patented insulated crossovers, can be thought of as “woven” coils.*



*Pictured: Standard surface coils, a tuning screwdriver and a Remote Coil Matching Network.*

Hundreds of standard coils are available — numerically optimized — up to 50% higher S/N. Custom coils are also available.

**Unique curved surface coils.** The coil shown below was developed for University of Jena, Germany. [Click here](#) for more details.



### New Faces at Doty Scientific:

*We have added several talented people to our staff this year. Here are the two most recent.*

#### Yuriy Sazyuk, Ph.D. Physicist



*Yuriy came to us from Iowa State University where he was a post- doctoral research assistant.*

*Yuriy received his Master’s degree from the Univ. of Wisconsin in Madison, and received his Ph. D. at the Univ. of Minnesota in Minneapolis.*

#### Forrest Rusyniak, MS Physicist



*Forrest received his Master’s degree from Rensselaer Polytechnic Institute in Troy, NY where he was also a Graduate Research Assistant.*