Advanced Radiology Services Foundation

ANNUAL REPORT 2021

Advanced Radiology Services Foundation

Dear friends:

The ARS Foundation was initiated by the members of Advanced Radiology Services, PC as a public charity with a mission to use charitable giving to improve the field of radiology. Our method is to be a catalyst, looking for strategic ways that our giving can be multiplied by outside resources to strengthen other organizations.

As we have passed through a second challenging year of the coronavirus pandemic, this has again been a successful year for the Foundation. This annual report provides a moment to report those successes to you.

Radiopaedia.org: This year we began a second grant in support of the excellent free open-access radiology website radiopaedia.org, led by Dr. Frank Gaillard, in order to further develop its technical capacity. The second step of this potential multi-year plan has been to develop the capacity to annotate the many submitted cases and to optimize the presentation of those cases on the website. To increase impact, this grant was provided in a match format, and radiopaedia.org successfully matched our grant with additional subscriptions.

Emory University Center for Ethics/Michigan State University: In 2021, the ARS Foundation offered a second grant to Dr. John Banja as the lead of the Emory University Center for Ethics. Along with Michigan State University their project focuses on the non-interpretive aspects of artificial intelligence in radiology. Specifically, focusing on the ethics, economics, and legal aspects that have been only superficially discussed until now. This grant has already generated conference presentations, published articles, and a podcast with radiology luminaries. The grant was transformed successfully into a matching grant in 2021, with our funding matched by the Emory Department of Radiology.

Harvey L. Neiman Health Policy Institute through the American College of Radiology (ACR) Foundation: Our goal in strongly supporting this institute has been to create a national "think tank" for radiology health policy research. We have been recognized by the ACR for our leadership work on this topic. After our first year of funding, we created a challenge match to strengthen the institute's fundraising. Now in its sixth year, this challenge has received a much greater fundraising response than expected. Our challenge grant has been matched first by the ACR Foundation and then matched again by individual and group donors. Equally important, our leadership work on this topic has helped catalyze a shift in the ACR Foundation's strategic direction toward supporting health policy research. We now have a position on their advisory board.

<u>Radiological Society of North America (RSNA):</u> Our continued support of the RSNA Research and Education Foundation was recognized as a visionary support group at the silver level. The RSNA Foundation has achieved for each $1 donated an average of a $50 match from other funding sources such as the National Institutes of Health.

<u>Michigan State University:</u> This year we continue our support of three research and education projects driven by Dr. Adam Alessio at MSU. In addition, we continued our support of Dr. Sai Ravishankar though MSU for research involving methods to use AI to speed up the acquisition of MRI images. His research has led to several publications.

Our 2020-2021 individual donor support fundraising drive raised donations totaling $90,000 from 36 donors. With the excellent work of Cheryl Buehler as our Treasurer, we will continue a successful investment plan to promote our Foundation's financial future. The Foundation's total grant support for 2021 was $155,000.

I am grateful that we have been given the opportunity to be good stewards of the Foundation's resources and in the faith of its donors. We plan to maintain this path for upcoming years.

Warmly,

Dieter Hollstein, MD MPH, on behalf of the ARS Foundation Board

About the Foundation

MISSION

The ARS Foundation is dedicated to supporting organizations that improve the health of communities our members serve and investing in the future of radiology.

CORE VALUES

The ARS Foundation is operated in a transparent fashion with a clear and consistent grant selection process in order to respect our supporters and maintain their confidence.

- Provide leadership for other radiology groups for their charitable activities.

- Make a positive difference.

2021 BOARD OF DIRECTORS

Thomas Archambeau, MD

Leonard Coiner, MD

Ryan Duhn, MD

Susan Ervine, MD

Brian Fedeson, MD

Rolf Dieter Hollstein, MD

Leena Mammen, MD

2021 OFFICERS

Rolf Dieter Hollstein, MD - President

Thomas Archambeau, MD - Vice President

Cheryl Buehler - Treasurer

Laura Perkovic - Secretary

2021

2020-2021 Fundraising Drive

Visionary Level

- Ryan and Valerie Duhn
- Rolf Dieter Hollstein
- Charles and Mary Luttenton
- David and Kirsten Rawson
- Leonard and Marjorie Coiner
- Anonymous donation

Leadership Level

- Dennis and Jennifer Bruce
- Katy and John Humphrey
- Michael F Knox, MD, FACR
- Ryan Konwinski, MD
- Ann and Steve Koss
- Jon–Eric Notarnicola
- Michael and Jennifer Ryan
- Michael Votruba
- Jim Morrison, MD, MBI
- Leena Mammen

Team Player Level

- Jill and Tom Archambeau
- Christopher Buchach, MD
- Jeffrey and Katherine Flermoen
- Phil and Katie Hartgerink
- Roman Hyszczak
- Nathan J Jordan, MD
- Richard and Beth Lichtenberg
- Eric Lindgren, MD
- Andreea Moore, MD
- Andy Moriarity
- Todd Mulderink, MD
- Geoffrey Remes
- Charles and Ruth Swallow
- Lisa Walker
- Andrew and Michele Woodrow
- Caroline P. Daly, MD
- Bruce Goethe, in memory of Robert H. Jongeward Jr, MD
- Anthony and Dr. Christina Jacobs
- Ann Koss, DO
- John Meyer, MD
- David and Kelly Fry
- Anonymous donation

2021
PROJECTS

• Radiopaedia.org

The ARS Foundation made their third donation to Radiopaedia.org in 2021. Radiopaedia.org is one of the leading online radiology medical resources used across the globe. In 2021, they served 258 million pages (225 million, +15%) to over 41.3 million individuals (33.9 million, +22%) from every single country on earth.   During the year, over 5,000 new cases were contributed and 900 new articles were written bringing their total to public 45,711 cases and 15,697 articles.

• Emory University Center for Ethics / Michigan State University

A grant was provided to Emory University Center of Ethics for the third time in 2021. Dr. John Banja's research focuses on the underappreciated critical issues for radiologist learning about artificial intelligence and radiology. Dr. Banja's AI in radiology podcast index is growing. Podcasts are available via a subscription as of 2021. AI will soon be a clinical necessity and a it becomes the standard of care, Dr. Banja is working with multiple specialists to figure out how to entirely integrate it into clinical practice without causing frustration among radiologists. Multiple articles on this topic continue to be published, monthly AI journal club meetings in collaboration with MSU, and national public speaking engagements on AI in radiology continue to occur.

- # Harvey L. Neiman Health Policy Institute (NHPI) through the American College of Radiology (ACR) Foundation

The ARS Foundation has donated to the ACR Foundation to support the Harvey L. Neiman Health Policy Institute since 2015. In 2021, the largest project was the launch of the new Neiman Institute Grants Program. The new Grants Program will fund novel research that provides evidence to inform health policy and radiology practices that promotes the effective and efficient use of healthcare recourses with the goal of improving patient care. The program was featured in the latest ACR Bulletin Clinical Research column. LINK

The year started with the re-launch of the NHPI advisory board with an added seat for a representative of ACR Foundation interests, which is held by Dr. Andrew Moriarity. To support the approved strategy of involving stakeholder input, the NHPI extended agreements with the three NHPI research centers for an additional two years (IMPACT at Emory University, HEAL at Georgia Tech, and PRIME at the Feinstein Institutes at Northwell Health).

- # Radiological Society of North America (RSNA) - Research & Education Foundation

  The ARS Foundation has donated to the RSNA R&E Foundation through the Visionaries in Practice (VIP) Giving Program since 2013. The RSNA R&E Foundation bolsters the future of radiology by providing early-career researchers and educators in the field with critical funding to develop ambitious projects.

- # Michigan State University Institute for Quantitative Health Sciences and Engineering

  In 2020, the ARS Foundation provided donations to MSU for research lead by Adam Alessio, PhD and Sai Ravishankar, PhD. Work continues in 2021 on all three research projects:
  - Generation of educational learning modules related to artificial intelligence (AI) in diagnostic medicine.
  - AI Competitions: Develop capacity to participate in grand challenges/AI competitions.
  - Research deep learning methods for evaluation of change/longitudinal monitoring in radiology.
  - Monthly ARS+MSU AI in Healthcare Journal Club

  Funds for Dr. Ravishankar support the development of robust machine learning methods for accelerating MRI scan and image reconstruction times.

Financial Position

FY 2021

Advanced Radiology Services Foundation

Statement of Financial Position
December 31, 2021

Assets	
Current Assets	
Cash: Investment	1,083,099
Cash: Operating	17,019
TOTAL Current Assets	**$1,100,118**
TOTAL Assets	**$1,100,118**

Net Assets	
Net Assets - Unrestricted	1,156,083
Change in Net Assets-Current Year	(55,965)
Total Net Assets	**$1,100,118**

Advanced Radiology Services Foundation

Statement of Financial Activities
December 31, 2021

Revenue	
Investment Income	86,014
Contributions Received	25,000
Interest Income	19
Total Revenue	**$111,033**

Expenses	
Contributions-Restricted	155,000
Fees Other - Unrestricted	11,998
Total Expenses	**$166,998**
NET INCOME/ (LOSS)	**$(55,965)**

Advanced Radiology Services Foundation
Board of Directors Contribution Report
For the Year Ending December 31, 2021

Charitable Orgainization - Unmatched	2018 Approved	2018 Spent	2019 Approved	2019 Spent	2020 Approved	2020 Spent	2021 Approved	2021 Spent
Health Policy Institute (American College of Radiology Foundation)	100,000	100,000	100,000	100,000	25,000	125,000	25,000	25,000
RSNA Research & Education Foundation	75,000	75,000	75,000	25,000	25,000	25,000	25,000	25,000
Radiopaedia.org			60,000	7,500		52,500	30,000	25,000
AI Ethics Project at Emory University			50,000	25,000		25,000	50,000	50,000
Shumaker Scholarship Grant	25,000	21,413			11,050	11,050	11,050	
MSU for multiple AI Projects (Adam)					120,000	90,000	150,000	30,000
MSU Cardiac MRI (Norm Beuchamp)							25,000	
MSU (Sai) Grant fo Fast MRI AI					30,000	30,000		
Association of University Radiologists R & E Foundation	25,000							
Balance for Other Projects/build up cash balance							183,950	
Total Approved	$ 225,000		$ 285,000		$ 211,050		$ 500,000	
Total Spent Year- to- Date		$ 196,413		$ 157,500		$ 358,550		$ 155,000

Beneficiary Stories:

Radiopeadia.org

Due in part to the gift from the ARS Foundation, in 2021 the new uploader was completed. The new uploader, which includes DICOM support and the ability to crop and zoom/pan images and trim large stacks. This is now the default uploader for all users.

In December, 2021 Radiopaedia.org was able to move all operations in-house, meaning they are now solely responsible for how their services are set up and maintained. This allows them to optimize costs and performance.

They have implemented DOI (digital object identifier) for all their cases and articles to allow contributors and authors to more easily cite their content.

To encourage their users to support Radiopaedia.org, they created the ability to become a Radiopaedia Supporter. They offer three levels of support (silver, gold and radium). During 2021 they were able to attract 427 new supporters bringing total donations to $57,269.24.
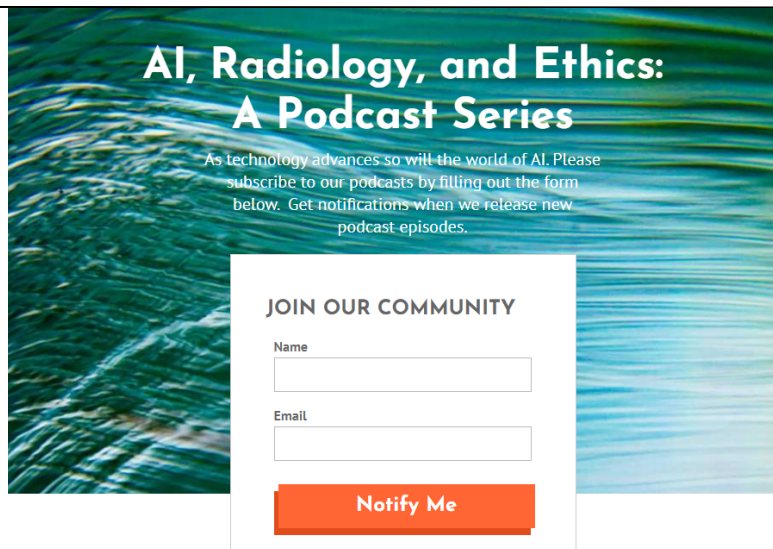
Beneficiary Stories:

<u>Emory University Center of Ethics</u>

In 2021 - Dr. Banja and his team had three peer-reviewed articles published.

- Banja, J., Rousselle, R., Duszak R., Safdar, N., Alessio, A.M. Sharing and selling images: Ethical and regulatory considerations for radiologists. [LINK](#)
- Banja, J., Hollstein, R., Bruno, M. When Artificial Intelligence Models Surpass Physician Performance: Medical Malpractice Liability in an Era of Advanced Artificial Intelligence. J Am Coll Radiolo. Feb. 2022. [LINK](#)
- Tharp, K., Santavicca, S., Hughes, D., Kishore, D., Banja, J., Diszak, R. In press. Characteristics of radiologists serving as medical malpractice expert witnesses for defense v. plaintiff.

Nine podcasts were completed in 2021 with 7 published so far:

- How will AI affect the medical malpractice experience in radiology? With Rich Duszak and Mike Bruno
- Implementing AI in health care delivery with Norman Beauchamp and Jonathan Lewin
- AI in radiology: The role of professional organizations in standards development with Geraldine McGinty and Michelle Yi
- Preparing the radiology department or clinic for the future of AI with Chuck Kahn
- It's complicated: Reimbursing radiology services in the age of AI with Melissa Chen
- On AI and health disparities with Bibb Allen
- On pigeons, residency training and the development of expertise with Elizabeth Krupinski
- On avoiding shortcut solutions in machine learning models with Josh Robinson
- AI in health disparities, vendor-hospital agreements and refugee re-settlements with Muhammed Idris

AI, Radiology, and Ethics: A Podcast Series

As technology advances so will the world of AI. Please subscribe to our podcasts by filling out the form below. Get notifications when we release new podcast episodes.

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EXPLORE THE ETHICS OF ARTIFICIAL INTELLIGENCE

"AI, Radiology and Ethics" is a podcast series featuring internationally recognized thought leaders commenting on the application of artificial intelligence to the imaging sciences. These podcasts are made possible by funding from the Advanced Radiology Services Foundation of Grand Rapids, Michigan and Emory University's Department of Radiology and Imaging Sciences.

Beneficiary Stories:

Harvey L. Neiman Health Policy Institute (NHPI) through the American College of Radiology (ACR) Foundation

In 2021 the NHPI published 28 papers involving 121 unique authors and 45 partner institutions and conducted 5 research rounds presentations. The most popular paper was "Federal Out-of-Network Balance Billing Legislation: Context and Implications for Radiology Practices." The U.S. News & World Report recently featured an in-press publication from the NHPI in JAMA Network Open evaluating the "Disparities in Use of Prostate MRI." The NHPI also updated part of the Neiman Almanac with a new data series showing "How Often Patients Leave their Home State to Receive Care." Finally the NHPI partnered with AIRP (formerly AFIP) to produce the AIRP-HPI Comparative Effectiveness Research Course to introduce radiology residents to key concepts in CER.

The NHPI has a robust research agenda planned for 2022 that includes over 40 studies slated to address key health policy issues that could impact radiologists and patients. Economic policy issues remain high priority, including surprise billing and concerns over the calculation of qualified payment amounts, understanding the impact of price transparency mandates, and providing objective data to inform the debate over MARCA and scope of practice for non-physician radiology providers. There are also studies underway at our HEAL and IMPACT centers that address ACO radiologist participation and lung cancer screening opportunities.

Beneficiary Stories:

RSNA R&E Foundation

The R&E Foundation works hard to ensure thoughtful stewardship with 94% of donations are used effectively funding grant programs. In 2021 the R&E Foundation provided over $3 million in grant funding to 85 grant recipients at 40 different institutions.

Throughout the R&E's 35+ years:
- 1,500 investigators and educators received grants.
- 1,600 individual projects were funded
- $70 million in cumulative grant funding

Beneficiary Stories:

Michigan State University - Institute for Quantitative Health Sciences and Engineering

Project 1: Generation of educational learning modules related to AI in diagnostic medicine.
- The first round of educational modules were published in July 2021
- Several revisions have been performed.
- Modules available for download or easy use with Google CoLab environment.

[LINK TO MODULES](#)

Project 2: AI Competitions: Develop capacity to participate in grand challenges/AI competitions.
- In 2021, MSU participated in the RSNA Brain Tumor AI Challenge

[LINK](#)

Project 3: Research deep learning methods for evaluation of change/longitudinal monitoring in radiology.
- In the summer of 2021, Spectrum IRB approval and business agreement were processed.
- June 2021 - present, work continues on process to anonymize, export, and transfer images from Spectrum to MSU (Dr. Morrison and Dr. Alessio)
- September 2021 - present, Henry Fessler, graduate student, working on machine learning models to express change in longitudinal feature space.

Future Direction:

In 2022, we plan to continue our support of our current project portfolio. Many of these projects now contain a matching component to their grants and we will continue to use this mechanism.

We will again endeavor to increase our fundraising. Our investment strategy has been successful and we plan to use this strategy in future years to best steward our resources.

As always, we will continue to scout for new projects.

As we have done in the past, we plan to maintain our strategies of:
- identifying underappreciated opportunities;
- developing matching grants; and
- creating alliances in order to use our funding capacity as a catalyst for improving the health of our communities and investing in the future of radiology.

Advanced Radiology Services Foundation