Dr Andrew Edet Ekpenyong

CONTACT INFORMATION

Department of Physics
Creighton University
Omaha, NE 68178, USA

Mobile: +14025757030
E-mail: andrewekpenyong@creighton.edu

ACADEMIC APPOINTMENTS

Associate Professor of Physics, tenured July 2022 to present
Creighton University, NE, USA

Assistant Professor of Physics, tenure-track July 2017 to July 2022
Creighton University, NE, USA

Resident Assistant Professor of Physics July 2014 to July 2017
Creighton University, NE, USA

Postdoctoral Scientist/Lecturer July 2012 to July 2014
Biotechnology Center, Technical University Dresden, Germany

EDUCATION

University of Cambridge, Cambridge, UK,

Ph.D., Physics, Oct. 2009 - Oct. 2012

- Thesis Topic: *Viscoelastic and optical properties of blood stem cells: from differentiation to activation and infection*
- Supervisor: Prof Dr Jochen Guck
- Areas of Study: Applied Optics, Biophysics, Soft Matter Physics

East Carolina University, North Carolina, USA,

Terminated, Biomedical Physics Ph.D. Program, Aug. 2008 - Aug. 2009

- Areas of Study: Radiotherapy Physics, Clinical/Medical Dosimetry

Creighton University, Nebraska, USA,

M.S. in Physics, Dec. 2005 - Dec. 2007, GPA: 3.65/4.00 (A or 91.5%)

- Thesis Topic: *Hybrid Ray Optics and Continuum Mechanics Modeling of Cell Deformation in the Optical Stretcher*
- Advisor: Prof Michael Nichols

Pontifical Urban University, Rome, Italy,

B.D., Theology, Oct. 1999 - June 2003. *Summa cum laude* (1st Class)

B.Phil., Philosophy, Oct. 1994 - June 1998. *Summa cum laude* (1st Class)

Federal University of Uyo, Nigeria,

B.A., Philosophy, Oct. 1994 - June 1998. *Summa cum Laude* (1st Class)

Secondary School: St. Patrick's College, Calabar, Nigeria, 1988 -1993

with Distinction in all 8 subjects at O'Level.

Primary School: Akim Qua Town, Calabar, Nigeria, 1982 -1987

Double promotion from primary two to four

Professional Training

Technische Universitaat Dresden, Germany,

Postdoctoral Scientist, Jun. 2012 - Jul. 2014

- Main Project: *Light Touch/Feeling With Light: Development of a multimodal optofluidic platform for high-content blood cell analysis. European Union's Seventh Framework Programme*
- Supervisor: Prof Dr Jochen Guck

Heidelberg University, Heidelberg, Germany,

Medical Physics with Distinction in Radiotherapy and Biomedical Optics (auditing), Sept 2013 -Oct 2013

- Courses audited: *Engineering Mathematics, Genetics, Basic Medical Sciences, Special Radiotherapy Techniques, Biophysics, Biomedical Engineering, Image Analysis*
- Main Lecturer: Prof. Dr. Juergen Hesser

Research Interests and Areas

Using principles and tools from physics to tackle biomedical problems. Development of photonic and microfluidic tools for the marker-free characterization of biological cells with therapeutic and diagnostic applications, especially cancer metastasis: cell/tissue biophysics, bio-mimetics, mathematical modeling, fractional calculus in medicine and biology, radiological physics, quantum dots, neurophysics, microgravity, cell mechanics, physics of cancer, nanoparticle-mediated radiotherapy and radioimmunotherapy.

Graduate level Teaching Experience

Number of students in each class ()

1. Instructor, **Dosimetry and Radiation Protection, Phy 662, 3 Cr**, graduate students in Medical Physics, Spring 2017 (5), Spring 2019 (6), Spring 2021 (8), Spring 2023 (12)
2. Instructor, **Physics of Radiation Therapy, Phy 661, 3 Cr**, graduate students in Medical Physics, Fall 2018 (8), Fall 2020 (10), Fall 2022 (10)
3. Instructor, **Quantum Mechanics, Phy 531, 3 Cr**, open to graduate students and seniors, Fall 2016 (5), Fall 2020 (13), Fall 2021 (11), Fall 2022 (11), Fall 2023 ()
4. Instructor, **Advanced Laboratory Phy 581, 2 Cr**, open to graduate students and seniors, Fall 2016 (5)
5. Instructor, **Nuclear Instruments and Methods, Phy 562, 2 Cr**, open to graduate students and seniors, Fall 2015 (7), Fall 2017 (7), Fall 2019 (10), Fall 2021 (8), Fall 2023 ()
6. Instructor, **Radiation Biophysics, Phy 565, 3 Cr**, open to graduate students and seniors, Fall 2021 (12)

7. Instructor, **Directed Independent Research, Phy 797, 1 Cr**, every semester, 2014, 2015, 2016, Spring 2017 (1), Fall 2017 (2), Spring 2018, Fall 2018 (2), Spring 2019 (1), Fall 2019 (1), Spring 2020 (1), Fall 2020 (1), Spring 2021 (3), Fall 2021 (3), Spring 2022 (4), Fall 2022 (3), Sp 2023 (3), Fall 2023 ()

8. Instructor, **Medical Physics Graduate Seminar, Phy 792, 1 Cr**, Spring 2022 (13)

9. Supervisor, **Master's Thesis, Phy 799, 3 Cr**, every semester, 2016, Fall 2017 (1), Sp 2018 (1), Fall 2019 (1), Fall 2020 (3), Sp 2021 (3), Fall 2021 (3), Spring 2022 (4), Fall 2022 (2), Spring 2023 (2), Fall 2023 ()

10. Post-doctoral substitute instructor (under Prof Dr Jochen Guck), **Biophysical Methods, Molecular Bioengineering Master's Program**, 1st Semester, 2012/2013 and 2013/2014

11. Post-doctoral substitute instructor (under Prof Dr Jochen Guck), **Biophysical Methods, Nanobiophysics Master's Program**, 1st Semester, 2012/2013 and 2013/2014

Undergraduate level Teaching Experience

Number of students in each class ()

1. Instructor, **Biological Physics, Phy 353, 3 Cr**, Spring 2016 (7), Spring 2018 (9)

2. Instructor, **Directed Independent Research, Phy 497, 1 Cr**, every semester, Fall 2014 (1), Spring 2015 (1), Fall 2015 (1), Spring 2016 (4), Fall 2016 (4), Spring 2017 (4), Fall 2017 (12), Spring 2018 (7), Fall 2018 (7), Spring 2019 (9), Fall 2019 (9), Spring 2020 (7), Fall 2020 (14), Spring 2021 (15), Fall 2021 (15); Spring 2022 (15); Fall 2022 (14); Sp 2023 (18);

3. Instructor, **Research Capstone, Phy 499, 1 Cr**, Spring 2022 (12)

4. Instructor, **General Physics for Life Sciences II, Phy 202, 3 Cr** Summer 2015 (26), Fall 2015 (17), Spring 2016 (29), Summer 2016 (28), Spring 2017 (14), Spring 2018 (27), Fall 2018 (50), Spring 2019 (39), Fall 2019 (27), Spring only 2020 (45), Spring 2021 (34)

5. Instructor, **General Physics for Life Sciences I, Phy 201, 3 Cr** Fall 2017 (41), Spring 2022 (38); Fall 2022 (33); Spring 2023 (39);

6. Instructor, **General Physics Laboratory for Life Sciences II Phy 206, 1 Cr**, Summer 2015 (48), Summer 2016 (28), Fall 2018, Spring 2018, 2019, Spring 2020 (166), Fall 2020 (33), Spring 2021 (214)

7. Instructor, **General Physics II, Phy 214** Summer 2014 (12)

8. Instructor, **General Physics Laboratory for Majors Phy 214 LM and Phy 224 LM, 1 Cr**, Fall 2014 (7)

9. Instructor, **RSP 101 - An Introduction to the Culture of Collegiate Life, 0.5 Cr**, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2022, Spring 2023

10. Departmental Supervisor (teacher of a small group of students), **Part II Physics**, Soft Condensed Matter (covering fluid dynamics, polymer physics, macromolecules and self-assembly for 3rd year undergraduates), Univ. of Cambridge, Lent Term 2011 (under Dr Pietro Cicuta)

11. College Supervisor, **Part IB Physics** (covering electromagnetism, thermodynamics and dynamics, for 2nd year undergraduates), Univ. of Cambridge, 2010-2011 session (under Prof Ulrich Steiner)

12. Laboratory Instructor, **Physics 1260 (Electromagnetism, Optics and Waves)**, East Carolina University, Fall and Spring, 2008/2009

13. Laboratory Instructor, **Introductory Astronomy**, Creighton University, Nebraska, Fall 2007, coordinated by Dr Jack Gabel

14. Graduate Teaching Assistant and Laboratory Instructor, **General Physics II (212)**, Creighton University, Nebraska, Spring 2007 (under Prof Michael Cherney).Topics included oscillations, waves, optics, electricity and magnetism, DC and AC circuits, modern physics. Basic calculus used.

15. Graduate Teaching Assistant and Laboratory Instructor, **General Physics I (211)**, Creighton University, Nebraska, Summer 2007. Topics included kinematics, Newton's laws of motion, conservation of momentum and energy, rotational dynamics, thermodynamics, and fluids. Basic calculus used.

Average Number of Students Per Semester: 538

GRADUATE RESEARCH STUDENTS SUPERVISED, SINCE 2012

For those independently supervised, noted are years in my lab and position(s) after leaving my lab. * indicates my research student in Creighton University.

1. Danielle Kaminski 2011-2012, M.Sc student, University of Cambridge, UK (co-supervised with Dr Jochen Guck)

2. Mirjam Schuermann, 2012-2014, PhD student, Technische Universitaat Dresden, Germany (co-supervised with Prof Dr Jochen Guck)

3. Paul Mueller, 2012-2014, PhD student, Technische Universitaat Dresden, Germany (co-supervised with Prof Dr Jochen Guck)

4. Christoph Faigle, 2012-2014, PhD student, Technische Universitaat Dresden, Germany (co-supervised with Prof Dr Jochen Guck)

5. Maik Herbig, 2013-2014, Diploma (Masters) student, Technische Universitaat Dresden, Germany, independently supervised

6. Wenhong Li, 2013-2014, research intern (post-Masters), Technische Universitaat Dresden, Germany, independently supervised

7. *Bong Han Lee, 2016-2018, Masters student, Creighton Univ., independently supervised. Current: PhD in Biophysics expected, Texas Christian University.
8. *Aaron Herridge, 2017-2019, Masters student, Creighton Univ., independently supervised. Current: leave of absence.
9. *Michael J. Merrick, 2017-2019, Masters student, Creighton Univ., independently supervised. Current: PhD in Biomedical Engineering expected, University of Iowa.
10. *Honour H. Djam, 2018-2020, Masters student, Creighton Univ., independently supervised. Current: PhD in Medical Physics in progress, Med Phys Residency, Henry Ford Health Systems, Detroit.
11. *Michael Mimlitz, 2018-2020, Masters student, Creighton University, independently supervised. Exit sua sponte.
12. *Caleb Thiegs, 2019-2021, Masters student, Creighton Univ., independently supervised. Med Phys Residency, Texas Oncology, Dalas.
13. *Anne Hubbard, 2020-2022, Masters student, Creighton University, independently supervised. Med Phys Residency, Willis-Knighton Proton Therapy Center, Louisiana.
14. *Yohan Walter, 2020-2022, Masters student, Creighton University, independently supervised. Med Phys Residency, Willis-Knighton Proton Therapy Center, Louisiana.
15. *Melanie Schwengler, 2021-present, Masters student, Creighton University, independently supervised
16. *Bayode Ibironke, 2022-present, Masters student, Creighton University, independently supervised

UNDERGRADUATE RESEARCH STUDENTS SUPERVISED, SINCE 2012

Noted are years in my lab and position(s) after leaving my lab or current positions. * indicates my research student in Creighton University.

1. *Sruti V. Prathivadhi-Bhayankaram 2014-2017, MD, University of Iowa Medical Center
2. *Jianhao Ning, 2015-2016.
3. *Patrick Nguyen, 2015. Engineering School, U Washington
4. *Michael J. Mimlitz, 2015-2019. Medical Physics Master's student
5. *Devika Prasanth, 2016-2018. Clinical Cardiovascular Perfusionist, UNMC.
6. *Sindhuja Suresh, 2016-2018. Intending medic.
7. *Noah Zetocha, 2016-2017. Employed, Omaha
8. *Christopher G. Landis, 2016-2018. Employed. Minnesota.

9. *Anh Vo, 2016-2018. University of Nebraska, Lincoln, PhD student, Mathematics
10. *Joe G. Bamesberger, 2017-2018, 2020. Creighton Graduate School.
11. *Maria (Mafer) Fernanda Correa, 2017-2018.
12. *Andrew J. Walther, 2017-2020. PhD student, Biostatistics, UNC, Chapel Hill
13. *Jana A. Chavez, 2017. Exit sua sponte.
14. *Kaamil A. Abid, 2017-2019. Intending medic.
15. *Chisom I. Nwakama, 2017-2021. Law School, UPenn.
16. *Haris M. Akhter, 2017-2019. Medical School, UNMC, Omaha
17. *Allie E. Bray, 2017-2019. Employed, Berkshire Hathaway, Omaha.
18. *Catherine J. Weeder, 2018-2019. School of Optometry.
19. *Ashley T. Abraham, 2018-2021. Medical School, Univ of Chicago.
20. *Duke K. Mailolo, 2018. Intending medic.
21. *Mackenzie R. McCuddin, 2018-2020. Medical School, UNMC.
22. *Gargee R. Khaparde, 2019-2021. Creighton School of Medicine.
23. *Megha L. Jacob, 2019-2021. Medical School, Kansas Univ. School of Medicine, Kansas City.
24. *Harry Kramer, 2019-2021. Intending medic.
25. *Scott Baumel, 2019-2021. Intending medic.
26. *Spencer McKinley, 2019-2022, Medical School, Wash Univ.
27. *Melanie Schwengler, 2019-2022. Med Physics Master's Program, Creighton Univ.
28. *Jackson Lewison, 2019-2021. Intending physician assistant.
29. *Sukhman Virdi, 2020-2023. Intending medic.
30. *Destiny Jordan, 2020-2022. Gap year in France. Intending medic.
31. *Olivia Salas, 2020-2022. Intending medic.
32. *Allie Benoit, 2020-2023. Navy Nuclear Submarine.
33. *Erika Jank, 2020-2023. PhD in Medical Physics. UCLA.
34. *Kate Wald, 2020-2021
35. *Corner Peeples, 2021-2022. Creighton School of Dentistry.
36. *Adam Taylor, 2021-2022. Creighton School of Medicine, Arizona.

37. *Nick Herrero, 2021-2022. Intending medic. Gap year, teaching Theology.
38. Israel Bryant (High School, Creighton University STEM Corridor Program, Summer 2021). Fall 2021. UNL, Engineering.
39. *Arij Khan, 2021-present
40. *Kylie Machida, 2021-present
41. *Lemke Katherine, 2021-present
42. *Jayce Hughes, 2021-present
43. *Michael D Long, 2022-present
44. *Dylan Bui, 2022-present
45. *Kacey Nishida, 2022-present
46. *Ashley Homecgoy, 2022-present
47. *Jordyn Rockwell, 2022-present
48. *Jacob Woolf, 2022-present
49. *Joshua Taylor, 2022-present
50. *Michael Long, 2022-2023. Intending medic.
51. *Charlotte R Block, 2023-present
52. *Natasha Ratnapradipa, 2023-present
53. *Philip G Richardsen, 2023-present
54. *Liz Cronin, 2023-present
55. *Sara Strom, 2023-present
56. *Bui, Linh, 2023-present

Per Semester Summary

11 students in my research group, Spring 2017

14 students in my research group, Fall 2017

16 students in my research group, Spring 2018

15 students in my research group, Fall 2018

16 students in my research group, Spring 2019

15 students in my research group, Fall 2019

16 students in my research group, Spring 2020

17 students in my research group, Fall 2020

18 students in my research group, Spring 2021

16 students in my research group, Fall 2021

18 students in my research group, Spring 2022

16 students in my research group, Fall 2022

20 students in my research group, Spring 2023

Research Skills I teach students in my lab (as needed)

1. Mathematical and Computational Skills
   (a) MATLAB for curve fitting, data plotting and data modeling.
   (b) COMSOL Multiphysics for simulations and data modeling.
   (c) OriginLab, Origin and OriginPro, for error analysis, curve fitting and data plotting.
   (d) AutoCad for designing and prototyping microfluidic devices
   (e) ImageJ for morphometry, image analysis
   (f) R for paremetric curve fitting
2. Biomedical Physics.
   (a) Quantum-Dots-based fluorescence spectroscopy to assess ROS
   (b) Phase contrast and fluorescence microscopy
   (c) Microfluidic Microcirculation Mimetic (MMM) to assess cell mechanics for Physics of Cancer
   (d) Cell Irradiator (Faxitron CellRad) for radiotherapeutic experiments
   (e) Electric cell impedance sensing (ECIS) for quantifying cell attachment/migration
   (f) CytoSMART Omni, real time and cloud-based live-cell imaging for high-throughput experiments such as clonogenic assays
   (g) Nanoparticle-mediated radiotherapy, in vitrio radiotherapy
   (h) Nanoparticle-mediated chemotherapy and immunoradiotherapy
3. Biological Skills and Biological Physics Skills.
   (a) NASA-developed Rotary Cell Culture System (RCCS) to simulate microgravity
   (b) Adherent cell culture techniques for high content cell analysis with various cell types such as neurons (HCN2), brain cancer (T98G, U87 Glioblastoma), skin cancer (B16F10), lung cancer (H2087), breast cancer (MDA-MB-231) etc.
   (c) Suspended cell culture techniques for general in vitrio experiments with cells types such as myeloid leukemia (HL60), erythroid cells (K562), lymphocytic (Jurkat), etc.
4. Research Communications.
   (a) Mendeley for thesis writing, etc
   (b) Abstract writing, poster preparation, manuscript preparations, PowerPoint presentations.

Refereed Book Chapters and Journal Series in *Physics, Biomedical Physics, Biomedicine*

* indicates my research student in Creighton University

[1] *Djam, H K, *Lee B H, *Sindhuja S, **Ekpenyong AE** (2020) Quantum Dots for Assessment of Reactive Oxygen Species Accumulation During Chemotherapy and Radiotherapy. In: *Fontes A., Santos B. (eds) Quantum Dots. Methods in Molecular Biology, vol 2135. Humana, New York, NY, and Springer-Nature*, pp 293-303.
doi:https://doi.org/10.1007/978-1-0716-0463-2.
Role: Corresponding Author/Senior Author. I conceived and supervised the entire work. I wrote the manuscript based on 1st author's Master's thesis that I supervised.
Citations: 2

[2] Schurmann, M, Scholze, J, Muller, P, Chan, C J, **Ekpenyong AE**; Chalut, K J, Guck, J, (2015) Refractive index measurements of single, spherical cells using digital holographic microscopy. In: *Methods in Cell Biology Volume 125, Elsevier Inc*, pp 143-149.
doi:https://doi.org/10.1016/bs.mcb.2014.10.016.
Role: Co-Author
Citations: 32

Refereed Journal Publications in *Physics, Biomedical Physics, Biomedicine*

[3] *Walter Y, *Hubbard A, *Benoit A, *Jank E, *Salas O, *Jordan D, **Ekpenyong A**. (2022) Development of In Vitro Assays for Advancing Radioimmunotherapy against Brain Tumors. *Biomedicines*.10(8):1796.
doi:10.3390/biomedicines10081796.
Role: Corresponding Author/Senior Author. I conceived and supervised the entire work. I wrote the manuscript based on 1st author's Master's thesis that I supervised.
Impact factor: 4.757
Citations: 1 (Recently published, July 2022).

[4] *Merrick M, *Mimlitz M, *Weeder C, *Akhter H, *Bray A, *Walther A, *Nwakama C, *Bamesberger J, *Djam H, *Abid K **Ekpenyong A**. (2021) In vitro radiotherapy and chemotherapy alter migration of brain cancer cells before cell death. *Biochemistry and Biophysics Reports*
doi:10.1016/j.bbrep.2021.101071.
Role: Corresponding Author/Senior Author. I conceived and supervised the entire work. I wrote the manuscript based on 1st author's Master's report that I supervised.
Impact factor: 2.61
Citations: 4 (Recently published, July 2021).

[5] Palliyage G H, Hussein N, *Mimlitz M, *Weeder C... **Ekpenyong AE** (2021) Novel curcumin-resveratrol solid nanoparticles synergistically inhibit proliferation of melanoma cells *Pharmaceutical Research*
doi:10.1007/s11095-021-03043-7.
Role: Co-Author. Supervised the Electric Cell Impedance Sensing measurements for physiological assessment the synthesized drugs and nanoparticles. Member of Thesis Committee of the 1st Author.
Impact factor: 4.469

Citations: 16 (Recently published)

[6] *Prasanth D, *Sindhuja S, *Prathivadhi-Bhayankaram S, *Mimlitz M, *Zetocha N, *Lee B, **Ekpenyong AE** (2020) Microgravity modulates effects of chemotherapeutic drugs on cancer cell migration *Life* 10 (9), 162
doi:10.3390/life10090162.
Role: Corresponding Author/Senior Author. I conceived and supervised the entire work. I wrote the manuscript.
Impact factor: 3.253
Citations: 8

[7] *Lee B H, *Sindhuja S, **Ekpenyong AE** (2018) Fluorescence intensity modulation of CdSe/ZnS quantum dots assesses ROS during chemotherapy and radiotherapy for cancer cells *J Biophotonics* e201800172.
doi:10.1002/jbio.201800172.
Role: Corresponding Author/Senior Author. I conceived and supervised the entire work. I wrote the manuscript based on 1st author's Master's thesis that I supervised.
Impact factor: 3.768
Citations: 9

[8] Wu, Pei-Hsun,..., **Ekpenyong AE** et al. (2018) A comparison of methods to assess cell mechanical properties *Nat Methods* Vol 15. 491−498.
doi:10.1038/s41592-018-0015-1.
Role: Co-Author. Carried out experiments, analyzed results and wrote part of manuscript in an international collaboration organized by the US National Institutes of Health, NIH. Travelled to NIH, Bethesda, MD, twice, including once while faculty in Creighton, for the writing of the manuscript along with global leaders in cell mechanics from ten universities in USA, Germany and France.
Impact factor: 47.99
Citations: 418

[9] **Ekpenyong AE** N Toepfner, et al. (2017) Mechanical deformation induces depolarization of neutrophils *Science Advances.* Vol 3, No. 6. 10.1126.
doi:10.1126/sciadv.1602536.
Role: First Author. Prof. Jochen Guck wrote of my role and importance of the work: "Utilizing ... microfluidic techniques, he also showed a surprising, and previously unknown feature of blood cells, which can not only be activated, but also de-activated by mechanical forcing. This has important implications for understanding the pathophysiology of inflammatory disorders and helps rationalize latest medical discoveries of our Cambridge collaborators in this area."
Impact factor: 14.136
Citations: 69

[10] *Prathivadhi-Bhayankaram SV, *Ning J, *Mimlitz M, *Taylor C, Gross E, Nichols M, Guck J, **Ekpenyong AE**. (2016) Chemotherapy impedes in vitro microcirculation and promotes migration of leukemic

cells with impact on metastasis *Biochem Biophys Res Commun.* 479 (4): 841-846.
doi:10.1016/j.bbrc.2016.09.121.
Role: Corresponding Author/Senior Author
Impact factor: 2.559
Citations: 15

[11] **Ekpenyong AE**, N Toepfner, ER Chilvers, J Guck. (2015) Mechanotransduction in neutrophil activation and deactivation *Biochimica et Biophysica Acta (BBA)* 1853 (11):3105-3116.
doi:10.1016/j.bbamcr.2015.07.015.
Role: First Author
Impact factor: 4.65
Citations: 53

[12] Chan CJ, **Ekpenyong AE**, Golfier S, Li W, Chalut KJ, et al. (2015) Myosin II activity softens cells in suspension. *Biophys J.*
doi:10.1016/j.bpj.2015.03.009.
Role: Co-First Author
Impact factor: 4.033
Citations: 104

[13] Otto O, Rosendahl P, Mietke A, Golfier S, Herold C, Klaue D, Girardo S, Pagliara S, **Ekpenyong A**, et al. (2015) Real-time deformability cytometry: on-the-fly cell mechanical phenotyping. *Nat Methods* 12(3):199-202.
doi:10.1038/nmeth.3281
Role: Co-Author. Prof Jochen Guck wrote of my role: "Due to his immense expertise with blood cell differentiation and microfluidics, he was also involved in the establishment of a novel cell mechanics characterization technique (real-time deformability cytometry; RT-DC) with the throughput of conventional flow cytometers...this technology is patented and now commercially available through a university spin-off: www.zellmechanik.com)."
Impact factor: 47.99
Citations: 592

[14] Man SM, **Ekpenyong AE**, Tourlomousis T, Achouri S, Cammarota E, et al. (2014) Actin polymerization as a novel innate immune effector mechanism to control *Salmonella* infection. *Proc Natl Acad Sci USA*
doi:10.1073/pnas.1419925111.
Role: Co-First Author
Impact factor: 12.779
Citations: 101

[15] Holmes D, Whyte G, Bailey J, Vergara-Irigaray N, **Ekpenyong AE**, et al. (2014) Separation of blood cells with differing deformability using deterministic lateral displacement. *Interface Focus* 4:6, 20140011
Role: Co-Author
Impact factor: 4.427
Citations: 125

[16] **Ekpenyong AE**, Man SM, Achouri S, Bryant C, Guck J, et al. (2013) Bacterial infection of macrophages induces decrease in refractive index. *J Biophotonics* 6:5, 393-397
doi:10.1002/jbio.201200113
Role: First Author
Impact factor: 3.768
Citations: 60

[17] Boyde L, **Ekpenyong A**, Whyte G, Guck J (2013) Elastic Theory for the Deformation of a Solid or Layered Spheroid under Axisymmetric Loading. *Acta Mechanica* 224: 4, 819-839.
Role: Co-Author
Impact factor: 2.113
Citations: 6

[18] **Ekpenyong AE**, Whyte G, Chalut K, Pagliara S, Lautenschlæger F, et al. (2012) Viscoelastic Properties of Differentiating Blood Cells Are Fate- and Function-Dependent. *PLoS ONE* 7: e45237.
doi:10.1371/journal.pone.0045237
Role: First Author
Impact factor: 3.752
Citations: 194

[19] Chalut KJ, Hœpfler, Lautenschlæger F,... **Ekpenyong AE**, ..., Guck J (2012) Chromatin decondensation and nuclear softening accompany Nanog downregulation in *mouse* embryonic stem cells. *Biophys J* 103(10): 2060−2070.
doi:https://doi.org/10.1016/j.bpj.2012.10.015
Role: Co-Author
Impact factor: 4.033
Citations: 172

[20] Chalut KJ, **Ekpenyong AE**, Clegg WL, Melhuish IC, Guck J (2012) Quantifying cellular differentiation by physical phenotype using digital holographic microscopy. *Integr Biol (Camb)* 4: 280−284.
doi:10.1039/c2ib00129b
Role: Co-First Author
Impact factor: 3.294
Citations: 95

[21] Boyde L, **Ekpenyong A**, Whyte G, Guck J (2012) Comparison of stresses on homogeneous spheroids in the optical stretcher computed with geometrical optics and generalized Lorenz-Mie theory. *Appl Opt* 51: 33, 7934-7944.
Role: Co-Author
Impact factor: 1.791
Citations: 27

[22] **Ekpenyong AE**, Posey CL, Chaput JL, Burkart AK, Marquardt MM, et al. (2009) Determination of cell elasticity through hybrid ray optics and continuum mechanics modeling of cell deformation in the optical stretcher. *Appl Opt* 48: 6344−6354.

doi:10.1364/AO.48.006344
Role: First Author
Impact factor: 1.791
Citations: 33

[23] Jacobs KM, Yang L V., Ding J, **Ekpenyong AE**, Castellone R, et al. (2009) Diffraction imaging of spheres and melanoma cells with a microscope objective. *J Biophotonics* 2: 521−527.
doi:10.1002/jbio.200910044
Role: Co-Author
Impact factor: 3.768
Citations: 45

Refereed Journal Publications in *Clinical Research*

[24] Asuquo M, Effa E, Gbotosho O, Otu A, Toepfner N, Ameh S, Bhayankaram S-P, Zetocha N, Nwakama C, Egbe W, Guck J, **Ekpenyong A**. (2022). Microfluidic Microcirculation Mimetic as a Tool for the Study of Rheological Characteristics of Red Blood Cells in Patients with Sickle Cell Anemia. *Applied Sciences* 12:9
doi:10.3390/app12094394.

[25] Otu A, Effa E, Umoh V, Maxwell N, **Ekpenyong A**. (2021) Private sector initiatives to tackle the burden of COVID-19: experiences from the Nigerian frontline. *Pan African Medical Journal* 38:233.
doi:10.11604/pamj.2021.38.233.24634

[26] Ikpeme A, Ani N, Isewele E, **Ekpenyong AE**, Ekanem E. (2019) Risk Factors for Cardiovascular Events in Rural Nigeria: A Cross Sectional Survey and Review of the Current Literature. *Innovative Journal of Medical and Health Sciences* 9(4): 370−375.
doi:https://doi.org/10.15520/ijmhs.v9i4.2533

[27] Ikpeme A, Ani N, Ago B, Effa E, Kosoko-Lasaki O, **Ekpenyong AE**. (2017) The Value of Mobile Ultrasound Services in Rural Communities in South-South Nigeria. *Open Access Maced J Med Sci* 5(7): 1011−1015.
doi:10.3889/oamjms.2017.191

[28] Ikpeme A, Ani N, Odusolu P, Eyong E, **Ekpenyong AE**. (2017) Spectrum of Disease and Diagnostic Value of Ultrasound in Inmates of a Correctional Facility in Nigeria. *European Journal of Pharmaceutical and Medical Research, EJPMR* 4(09): 122-126.

Manuscripts Under Review or in Preprint Repositories

[29] Djam H, Kramer H, Thiegs C, Merrick M, Mimlitz M, Weeder C, Akhter H, Jacob M, Khaparde G, Abraham A, Bamesberger J, **Ekpenyong A**. (2022) Simultaneous assessment of reactive oxygen species and radiosensitization of brain cancer cells using nanoparticle spectroscopy. *Preprints.org 2022, 2022110486* Medicine and Pharmacology; Oncology and Oncogenis.
doi:https://doi.org/10.20944/preprints202211.0486.v1

[30] Vo A, **Ekpenyong A**. (2022) Fractional calculus modeling of cell viscoelasticity quantifies drug response and maturation more robustly

than integer order models.*arXiv:2201.02589* Biological Physics; Cell Behavior.
doi:https://doi.org/10.48550/arXiv.2201.02589

[31] Walter Y, Hubbard A, Benoit A, Jank E, Salas O, Jordan D, **Ekpenyong A**. (2022) Development of in Vitro Assays for Advancing Radioimmunotherapy Against Brain Tumors.*Preprints* Medicine and Pharmacology, Oncology and Oncogenics.
doi:doi: 10.20944/preprints202205.0142.v1

[32] Walter Y, Hubbard A, Benoit A, Jank E, Salas O, Jordan D, **Ekpenyong A**. (2022) Development of in Vitro Assays for Advancing Radioimmunotherapy Against Brain Tumors.*Biomedicines*,under post-review revision for publication.

[33] Asuquo M, Effa E, Otu A, Ita O, Udoh U, Umoh V, Gbotosho O, Ikpeme A, Ameh S, Egbe W, Etok M, Guck J, **Ekpenyong A**. (2020) Prevalence of IgG and IgM antibodies to SARS-CoV-2 among clinic staff and patients-A pilot study. *Frontiers in Public Health* Section: Infectious Diseases-Surveillance, Prevention and Treatment. (Under review)

[34] Asuquo M, Effa E, Otu A, Ita O, Udoh U, Umoh V, Gbotosho O, Ikpeme A, Ameh S, Egbe W, Etok M, Guck J, **Ekpenyong A**. (2020) Prevalence of IgG and IgM antibodies to SARS-CoV-2 among clinic staff and patients. *medRxiv* Infectious Diseases Section.
doi:https://doi.org/10.1101/2020.07.02.20145441

[35] Merrick M, Mimlitz M, Weeder C, Akhter H, Bray A, Walther A, Nwakama C, Bamesberger J, Djam H, Abid K **Ekpenyong A**. (2020) Radiotherapy and chemotherapy alter migration of brain cancer cells before cell death. *bioRxiv* Biophysics Section.
doi:https://doi.org/10.1101/2020.07.23.218636.

[36] Devika Prasanth, Sindhuja Suresh, Sruti Prathivadhi-Bhayankaram, Michael Mimlitz, Noah Zetocha, Bong Lee, **Andrew Ekpenyong**. (2019) Microgravity modulates effects of chemotherapeutic drugs on cancer cell migration. *bioRxiv* Biophysics Section.
doi:https://doi.org/10.1101/2019.12.29.890632

PUBLISHED CONFERENCE ABSTRACTS *INTERNATIONAL AND NATIONAL*

[37] Jank E, Salas O, Benoit A, Walter Y, Hubbard A, **Ekpenyong A**, (2022) Cell Morphometry for Advancing Nanoparticle-Mediated Radiotherapy Against Glioblastoma, *American Assoc of Physicists in Medicine, 64th Annual Meeting*

[38] Hubbard A, Salas O, Jank E, Benoit A, Jordan D, Walter Y, Thiegs C, **Ekpenyong A**, (2022) Nanoparticles Enhance Radiosensitivity and Improve Chemoradiotherapy for Brain Tumors, *American Assoc of Physicists in Medicine, 64th Annual Meeting*

[39] Schwengler M, Ibironke B, Lemke K, Walther A, **Ekpenyong A**, (2022) Computational Modelling of Impedance Based Cell Migration for Improved Chemotherapy and Radiotherapy, *American Assoc of Physicists in Medicine, 64th Annual Meeting*

[40] Benoit A, Hubbard A, Walter Y, Salas O, Jank E, **Ekpenyong A**, (2022) Cell Morphometry Guides Nanoparticle-Mediated Chemoradiotherapy Against Brain Cancers, *American Assoc of Physicists in Medicine, 64th Annual Meeting*

[41] Walter Y, Salas O, Benoit A, Jordan D, Jank E, Hubbard A, **Ekpenyong A**, (2022) Advancing Radioimmunotherapy For Brain Tumors Using In Vitro Assays, *American Assoc of Physicists in Medicine, 64th Annual Meeting*

[42] Virdi S, Herrero N, Bryant I, Jordan D, Abraham A, Khaparde G, Jacob M, Nwakama C, **Ekpenyong A**, (2022) The role of cell mechanics in chemotherapy-induced metastasis *Biophysical Journal* 121 (3),266a doi:https://doi.org/10.1016/j.bpj.2021.11.1422

[43] Thiegs C, Djam K, Kramer H, Walter Y, Hubbard A, Benoit A, Jank E, Salas O, Schwengler M, Lewison J, McKinley S, **Ekpenyong A**, (2021) Nanoparticle-Mediated Assessment of ROS and Radiosensitization of Brain Cancer Cells for Improved Radiotherapy Outcomes, *American Assoc of Physicists in Medicine, 63rd Annual Meeting*

[44] Walter Y, Hubbard A, Thiegs C, Djam K, Kramer H, Benoit A, Jank E, Salas O, Schwengler M, McKinley S, Lewison J, **Ekpenyong A**, (2021) Development of Radioimmunotherapy for Brain Tumors Using In-Vitro Assays, *American Assoc of Physicists in Medicine, 63rd Annual Meeting*

[45] Hubbard A, Thiegs C, Djam K, Kramer H, Walter Y, Benoit A, Jank E, Salas O, **Ekpenyong A**, (2021) Concurrent Radiosensitization and Chemoradiotherapy for Brain Tumors, *American Assoc of Physicists in Medicine, 63rd Annual Meeting*

[46] Abraham, A, McCuddin M, Nwakama C, Jacob M, Khaparde G, Baumel S, McKinley S, Lewison J, Virdi S, Destiny J, Kramer H, **Ekpenyong A**, (2021) Which Chemotherapy Drugs Alter Cell Mechanical Properties with Impact on Metastasis? *Biophysical Journal* 120 (3),66a doi:https://doi.org/10.1016/j.bpj.2020.11.627

[47] Mimlitz, M, Walther, A, Merrick, M, Weeder C, Bamesberger J, Akhter, H, Djam H, **Ekpenyong A**, (2020) Complex impedance quantification of cell migration for the physics of cancer. *Bulletin of the American Physical Society*

[48] Djam, K, Mimlitz, M, Akhter, H, Weeder, C, **Ekpenyong A**, (2019) Simultaneous Assessment of ROS and Radiosensitization of Brain Cancer Cells for Improvement of Radiotherapy Outcomes, *Medical Physics* 46 (6), E344-E344 *American Assoc of Physicists in Medicine, 61st Annual Meeting*

[49] Walther A, Merrick M, Weeder, C, Akhter, H, **Ekpenyong A**, (2019) Physics of Cancer: Measurement and Modelling of Post-Radiotherapy

Cell Migration to Assess Metastasis, *Medical Physics* 46 (6), E583-E583 *American Assoc of Physicists in Medicine, 61st Annual Meeting*

[50] S Suresh, D Prasanth, C Nwakama, K Abid, B Lee, **Ekpenyong A**, (2018) Quantum Dots and Microfluidics for Assessment of ROS Production in Cells Following Radiotherapy, *Medical Physics* 45 (6), E342-E342 *American Assoc of Physicists in Medicine, 60th Annual Meeting*

[51] A Bray, H Akhter, C Weeder, M Mimlitz, A Herridge, M Merrick, **Ekpenyong A**, (2018) Post-Radiotherapy Migration of Cortical Neurons and Glioblastoma Cells in Vitro, *MEDICAL PHYSICS* 45 (6), E345-E345 *American Assoc of Physicists in Medicine, 60th Annual Meeting*

[52] B Lee, S Suresh, **Ekpenyong A**, (2018) Optoelectronic Tuning of Quantum Dots by Biological Cells. *Bulletin of the American Physical Society*

[53] C Landis, M Mimlitz, M Correa, N Zetocha, **Ekpenyong A**, (2018) Electric Impedance Monitoring of Cell Migration Following Irradiation. *Bulletin of the American Physical Society*

[54] M Mimlitz, N Zetocha, K Abid, BH Lee, **A. Ekpenyong**, (2018) Effects of Ionizing Radiation on the Mechanosensitivity of Single Cells *Biophysical Journal* 114 (3), 514a

[55] N Zetocha , B Lee , S Prathivadhi-Bhayankaram , M Mimlitz , **Ekpenyong A**, (2017) Radiotherapy and Chemotherapy Promote Metastasis Before Cell Death by Altering Cell Mechanical Properties *American Assoc of Physicists in Medicine, 59th Annual Meeting*

[56] B Lee, S Suresh, **Ekpenyong A**, (2017) Cyto-molecular Tuning of Quantum Dots. *Bulletin of the American Physical Society* 62,4

[57] S V Prathivadhi-Bhayankaram, J Ning, M Mimlitz, C Taylor, E Gross.... **Ekpenyong A**, (2017) Chemotherapy Impedes In Vitro Microcirculation and Promotes Migration of Leukemic Cells with Impact on Metastasis *Biophysical Journal* 112 (3), 124a

[58] D Prasanth, S Suresh, M Mimlitz, N Zetocha, **Ekpenyong A**, (2017) Microgravity Modulates Drug-Induced Enhancement of Cancer Cell Migration *Biophysical Journal* 112 (3), 311a

[59] S V Prathivadhi-Bhayankaram, CE Taylor, J Ning, M Nichols, ...**Ekpenyong A**, (2016) Cell Mechanical Properties and Cancer Metastasis: Effects of Cancer Drugs and Radiotherapy *Biophysical Journal* 110 (3), 621a

[60] S Prathivadhi, **Ekpenyong A**, M Nichols, C Taylor, J Ning, (2016) Effects of Chemotherapy-Induced Alterations in Cell Mechanical Properties on Cancer Metastasis *Bulletin of the American Physical Society* 61, 2

[61] **Ekpenyong A**, SM Man, P Tourlomousis, S Achouri, E Cammarota et at., (2015) Cell mechanics and immune system link up to fight infections. *Bulletin of the American Physical Society* 60, 1

[62] **Ekpenyong A**, Guck J (2014) The Evolution of Mechanical Properties of Differentiating Stem Cells is Fate-and Function-Dependent. *Biophysical J* 106: 2, 42a

[63] **Ekpenyong AE**, Chalut K, Whyte G, Guck J. (2011) Optical stretching and digital holography quantify physical phenotypes of differentiating cells. *Institute of Physics, Quantitative Methods in Gene Regulation*, London.

[64] Whyte G, Lautenschlæger F, Kreysing M, Boyde L, **Ekpenyong A**, Delabre U, et al. (2010) Dual-beam laser traps in biology and medicine: when one beam is not enough *SPIE NanoScience and Engineering*, 77620G-77620G-6.

[65] Jacobs KM, Ding J, Yang LV, Reynolds CL, **Ekpenyong AE**, Feng Y et al. (2010) Diffraction Imaging Flow Cytometric and 3-D Morphological Analysis of Three Cell Lines. *Biomedical Optics*, OSA Technical Digest (CD) paper BTuD44

[66] **Ekpenyong AE**, Ding J, Yang L V., Leffler NR, Lu JQ, et al. (2009) Study of 3D cell morphology and effect on light scattering distribution. *Proceedings of SPIE* 7367: 73671J-7. doi:10.1117/12.831510

[67] **Ekpenyong, AE**, and MG Nichols. (2007) Hybrid Ray Optics and Continuum Mechanics Modeling of Cell Deformation in the Optical Stretcher. in *Frontiers in Optics 2007/Laser Science XXIII/Organic Materials and Devices for Displays and Energy Conversion*. Optical Society of America, Washington, DC.JWC11.

[68] **Ekpenyong, Andrew E**, (2004) World Year of Physics 2005 and the Planetary Emergencies in *Proceedings of the 45th Annual Conference of the Science Teachers' Association of Nigeria*, ed. Matthias Akale, Heinemann Books, Ibadan, Nigeria. Paper 37, pages 192-196.

Published Conference Abstracts *Regional and Local*

[69] Bayode Ibironke, Melanie Schwengler, Allie Benoit, Katherine Lemke, Jayce Hughes, and **Andrew Ekpenyong**, 2023. Pembrolizumab-based Radioimmunotherapy Against Primary Brain Tumor and Brain Metastasis." *Programs and Proceedings, the Nebraska Academy of Sciences*, 133rd Annual Meeting, April 21st, 2023.

[70] Jayce Hughes, Kacey Nishida and **Andrew Ekpenyong**, 2023. Nanoparticle-Mediated Radiotherapy Against Glioblastoma" *Programs and Proceedings, the Nebraska Academy of Sciences*, 133rd Annual Meeting, April 21st, 2023.

[71] Katherine Lemke, Ashley Homecgoy, Liz Cronin, Yohan Walter, Andrew Walther, Bayode Ibironke, Melanie Schwengler, and **Andrew**

Ekpenyong, 2023. Computational Modeling of Impedance-based Migration Data Using R Codes." *Programs and Proceedings, the Nebraska Academy of Sciences*, 133rd Annual Meeting, April 21st, 2023.

[72] Bayode Ibironke, Melanie Schwengler, Allie Benoit, Katherine Lemke, Jayce Hughes, and **Andrew Ekpenyong**. Pembrolizumab-based Radioimmunotherapy Against Primary Brain Tumor and Brain Metastasis." *Creighton University Research Week*March 28th-29th, 2023. Poster Presentation 12. St Albert's Booklet, 2023.

[73] Michael Long, Dylan Bui, Melanie Schwengler, Allie Benoit, Erika Jank, Jayce Hughes, Kacey Nishida and **Andrew Ekpenyong**. "Fluorescence-Enhanced Cell Morphometry for Advancing Radioimmunotherapy with Ipilimumab Against Glioblastoma." *Creighton University Research Week* March 28th-29th, 2023. Poster Presentation 23. St Albert's Booklet, 2023.

[74] Kylie Machida, Bayode Ibironke, Allie Benoit, Erika Jank and **Andrew Ekpenyong**. "Fluorescence-Guided Morphometry for Advancing Pembrolizumab-based Radioimmunotherapy against Glioblastoma." *Creighton University Research Week* March 28th-29th, 2023. Poster Presentation 25. St Albert's Booklet, 2023.

[75] Jayce Hughes and **Andrew Ekpenyong**. "Nanoparticle-Mediated Radiotherapy." *Creighton University Research Week* March 28th-29th, 2023. Poster Presentation 21. St Albert's Booklet, 2023.

[76] Arij Khan, Jordyn Rockwell, Jayce Hughes, Kylie Machida, Bayode Ibironke and **Andrew Ekpenyong**. "From Melanoma to Glioblastoma: Rationale for Pembrolizumab-based Radioimmunotherapy against Brain Tumors." *Creighton University Research Week* March 28th-29th, 2023. Poster Presentation 24. St Albert's Booklet, 2023.

[77] Katherine Lemke, Ashley Homecgoy, Lizz Cronin, Yohan Walter, Andrew Walther, Bayode Ibironke, Melanie Schwengler and **Andrew Ekpenyong**. "Computational Modeling of Impedance-Based Cell Migration Data using R codes." *Creighton University Research Week* March 28th-29th, 2023. Poster Presentation 26. St Albert's Booklet, 2023.

[78] Sukhman Virdi, Melanie Schwengler, Allie Benoit, Erika Jank, Jayce Hughes, Arij Khan, Kylie Machida, Michael Long and **Andrew Ekpenyong**. "Ipilimumab-based Radioimmunotherapy Against Glioblastoma Rapidly Assessed Using Fluorescence Morphometry." *Creighton University Research Week* March 28th-29th, 2023. Oral Presentation 14. St Albert's Booklet, 2023.

[79] Melanie Schwengler, Katherine Lemke, Bayode Ibironke, and **Andrew Ekpenyong**, 2022. Computational Modelling of Impedance Based Cell Migration for Improved Chemotherapy and Radiotherapy." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[80] Bayode Ibironke, Melanie Schwengler, Katherine Lemke, and **Andrew Ekpenyong**, 2022. Computational Modelling of Impedance Based Cell Migration for Radiotherapy Against Brain Metastasis." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[81] Destiny Jordan, Yohan Walters, Anne Hubbard, and **Andrew Ekpenyong**, 2022. Impact of Radiotherapy and Chemotherapy on Neuronal Cells." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[82] Erika Jank, Olivia Salas, Allie Benoit, Yohan Walter, Anne Hubbard, and **Andrew Ekpenyong**, 2022. Cell Morphometry for Advancing Nanoparticle-Mediated Radiotherapy Against Glioblastoma." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[83] Allison Benoit, Erika Jank, Olivia Salas, Anne Hubbard, Yohan Walter, and **Andrew Ekpenyong**, 2022. Fluorescence Guided Morphometry in Chemo-Radiotherapy Against Brain Cancers." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[84] Yohan Walter, Olivia Salas, Allison Benoit, Destiny Jordan, Erika Jank, Anne Hubbard, and **Andrew Ekpenyong**, 2022. Advancing Radioimmunotherapy for Brain Tumors Usin In Vitrio Assays." *Programs and Proceedings, the Nebraska Academy of Sciences*, 132nd Annual Meeting, April 22nd, 2022.

[85] Walter Y., Hubbard A., Thiegs C., Djam K., Benoit A., Jank E., Salas O., Schwengler M., McKinley S., Lewison J., **Ekpenyong A.** Development of Radioimmunotherapy for Brain Tumors Using In Vitro Assays, *Missouri River Valley AAPM, 2021 Young Investigators Symposium.* April 10, 2021.

[86] Hubbard A., Walter Y., Thiegs C., Djam K., Benoit A., Jank E., Salas O., Schwengler M., McKinley S., Lewison J., **Ekpenyong A.** Concurrent Radiosensitization and Chemoradiotherapy for Brain Tumors, *Missouri River Valley AAPM, 2021 Young Investigators Symposium.* April 10, 2021.

[87] Melanie Schwengler, Andrew Walther, Michael Mimlitz, Harry Kramer, Jack Lewison, Megha Jacob, Joe Bamesberger, **Andrew Ekpenyong**, (2021) Mathematical Modelling of Impedance-Based Cell Migration for Physics of Cancer. *Programs and Proceedings, the Nebraska Academy of Sciences, 131st Annual Meeting, Online.* p. 118, April 22-24

[88] Megha Jacob, Gargee Khaparde, Ashley Abraham, Destiny Jordan, Chisom Nwakama, Sukhman Virdi, Scott Baumel, Spencer McKinley, **Andrew Ekpenyong**. (2021) Measurement of Cell Transit Times

Post-Chemotherapy for the Physics of Cancer. *Programs and Proceedings, the Nebraska Academy of Sciences, 131st Annual Meeting, Online.* p. 56, April 22-24

[89] Sukhman Virdi, Chisom Nwakama, Destiny Jordan, Ashley Abraham, Megha Jacob, Gargee Khaparde, **Andrew Ekpenyong**. (2021) Elastomer-Based Microfluidic Mimetics for the Physics of Cancer. *Programs and Proceedings, the Nebraska Academy of Sciences, 131st Annual Meeting, Online.* p. 77, April 22-24

[90] Thiegs C, Djam K, Kramer H, Walter Y, Hubbard A, Benoit A, Jank E, Salas O, Schwengler M, Lewison J, McKinley S, **Ekpenyong A**, (2021) Nanoparticle-Mediated Assessment of ROS and Radiosensitization of Brain Cancer Cells for Improved Radiotherapy Outcomes. *Creighton University Research Week* Poster Presentation. Virtual Program p. 36.

[91] Walter Y, Hubbard A, Thiegs C, Djam K, Kramer H, Benoit A, Jank E, Salas O, Schwengler M, McKinley S, Lewison J, **Ekpenyong A**, (2021) Development of Radioimmunotherapy for Brain Tumors Using In-Vitro Assays, *Creighton University Research Week* Poster Presentation. Virtual Program p. 37.

[92] Hubbard A, Thiegs C, Djam K, Kramer H, Walter Y, Benoit A, Jank E, Salas O, **Ekpenyong A**, (2021) Concurrent Radiosensitization and Chemoradiotherapy for Brain Tumors, *Creighton University Research Week* Poster Presentation. Virtual Program p. 36.

[93] Nwakama C, Jordan D, Virdi S, Abraham A, Jacob M, **Ekpenyong A**, (2021) Microfluidics for the Physics of Cancer *Creighton University Research Week* Poster Presentation. Virtual Program p. 72.

[94] Melanie Schwengler, Andrew Walther, Michael Mimlitz, Harry Kramer, Jack Lewison, Megha Jacob, Joe Bamesberger, **Andrew Ekpenyong**, (2021) Mathematical Modelling of Impedance-Based Cell Migration for Physics of Cancer. *Creighton University Research Week* Poster Presentation. Virtual Program p. 60.

[95] Abraham, A, McCuddin M, Nwakama C, Jacob M, Khaparde G, Baumel S, McKinley S, Lewison J, Virdi S, Destiny J, Kramer H, **Ekpenyong A**, (2021) Which Chemotherapy Drugs Alter Cell Mechanical Properties with Impact on Metastasis? *Creighton University Research Week* Poster Presentation. Virtual Program p. 84.

[96] Destiny Jordan, Sukhmann Virdi, Chisom Nwakama, **Andrew Ekpenyong**, (2021) Impact of Chemotherapeutic Drugs on the Mechanical and Physical Properties of Breast Cancer Cells *Creighton University Research Week* Poster Presentation. Virtual Program p. 86.

[97] Ashley Abraham, Mackenzie McCuddin, Chisom Nwakama, Megha Jacob, Gargee Khaparde, Scott Baumel, Spencer Mckinley, Harry Kramer **Andrew Ekpenyong**, (2020). Measurement of Cell Mechanical Properties Post-Chemotherapy for the Physics of Cancer. *Programs and*

*Proceedings, the Nebraska Academy of Sciences, Lincoln.*p. 47, April 17

[98] Chisom Nwakama, Ashley Abraham, Megha Jacob, Gargee Khaparde, Mackenzie McCuddin, **Andrew Ekpenyong**, (2020). Microfluidics for the Physics of Cancer Using Soft Lithography. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.*p. 71, April 17

[99] Kimal Honour Djam, Michael Merrick, Haris Akhter, Catherine Weeder and **Andrew Ekpenyong**, (2019) Quantum Dots for Simultaneous Assessment of ROS and Radiosensitization of Brain Cancer Cells. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.*p. 88, April 22

[100] Andrew Walther, Michael Mimlitz, **Andrew Ekpenyong**, (2019) Mathematical Modelling of Cell Attachment and Migration for Physics of Cancer. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.* p. 107, April 22

[101] Honour Djam, Haris Akhter, Michael Mimlitz, Michael Merrick, Gargee Khaparde, Catherine Weeder , **Andrew Ekpenyong**, (2019) Simultaneous Assessment of ROS and Radiosensitization of Brain Cancer Cells for Improvement of Radiotherapy Outcomes. *St Albert's Day, April 2nd, Creighton University, Omaha.* 70

[102] Michael Merrick, Michael Mimlitz, Catherine Weeder, Harris Akhter, Allie Bray, Andrew Walther, Chris Landis, Chisom Nwakama, Honour Djam, Kaamil Abid, **Andrew Ekpenyong**, (2019) Radiotherapy induces enhanced migration of brain cancer and neuronal cells before cell death. *St Albert's Day, April 2nd, Creighton University, Omaha.* 28

[103] Andrew Walther, Michael Mimlitz, Haris Akhter, Harry Kramer, Catherine Weeder, **Andrew Ekpenyong**, (2019) Mathematical Modelling of Cell Attachment and Migration for Physics of Cancer. *St Albert's Day, April 2nd, Creighton University, Omaha.* 67

[104] Allie Bray, Scott Baumel, Haris Akhter, **Andrew Ekpenyong**, (2019) Lacunarity-Based Cell Morphometry Using ImageJs FracLac. *St Albert's Day, April 2nd, Creighton University, Omaha.* 59

[105] Michael Mimlitz, **Andrew Ekpenyong**, (2019) Novel Physical Methods Enhance Cell Migration for Tissue Engineering. *St Albert's Day, April 2nd, Creighton University, Omaha.* 63

[106] Chisom Nwakama, Kaamil Abid, Ashley Abraham, Megha Jacob, Mackenzie McCuddin, **Andrew Ekpenyong**, (2019) Microfluidics for the Physics of Cancer Using Soft Lithography. *St Albert's Day, April 2nd, Creighton University, Omaha.* 69

[107] Ashley Abraham, Mackenzie McCuddin, Megha Jacob, Harry Kramer, Catherine Weeder, **Andrew Ekpenyong**, (2019) Which Chemotherapeutic Drugs Alter Cell Mechanics in Pro-metastatic Ways? *St Albert's Day, April 2nd, Creighton University, Omaha.* 51

[108] Haris Akhter, Honour Djam, Michael Merrick, Allie Bray, **Andrew Ekpenyong**, (2019) Mechanisms behind radiation-induced enhancement of migration of cortical neurons and brain cancer cells *St Albert's Day, April 2nd, Creighton University, Omaha.* 60

[109] Mackenzie McCuddin, Chisom Nwakama, Kaamil Abid, Ashley Abraham, Scott Baumel, Harry Kramer, **Andrew Ekpenyong**, (2019) Measurement of Cell Mechanical Properties Post-Radiotherapy and Post-Chemotherapy *St Albert's Day, April 2nd, Creighton University, Omaha.* 56

[110] Catherine Weeder, Gayathri Palliyage, Michael Mimlitz, Gargee Khaparde, Harsh Chauhan, **Andrew Ekpenyong**, (2019) Electric impedance monitoring of migration for nanoparticle-mediated delivery of drugs against skin cancer *St Albert's Day, April 2nd, Creighton University, Omaha.* 68

[111] Bong Han Lee, Sindhuja Suresh, **Andrew Ekpenyong**, (2018) Optoelectronic Modulation of Quantum Dots by Biological Cells. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.* 87

[112] Andrew Walther, Anh Vo, **Andrew Ekpenyong**, (2018) Mathematical Modelling of Cellular Bioimpedance for Physics of Cancer. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.* 87

[113] Sruti Prathivadhi, Jianhao Ning, Carolyn Taylor, Michael Nichols, **Andrew Ekpenyong**, (2016) Effects of Chemotherapy-Induced Alterations in Cell Mechanical Properties on Cancer Metastasis. *Programs and Proceedings, the Nebraska Academy of Sciences, Lincoln.* 86

[114] Devika Prasanth, Ashley Monaco, Sindhuja Suresh, Kaamil Abid, Chisom Nwakama, Subhra Mandal, Chris Destache, Annemarie Shibata, **Andrew Ekpenyong**, (2018) Biophysical Assessment of T-Cells for Nanoparticle-mediated Delivery of Anti-retroviral Drug DTG. *St Albert's Day, March 22, Creighton University, Omaha.* 10

[115] Sindhuja Suresh, Devika Prasanth, Chisom Nwakama, Kaamil Abid, Bong Han Lee, **Andrew Ekpenyong**, (2018) Quantum Dots and Microfluidics for Assessment of ROS Production Following Radiotherapy. *St Albert's Day, March 22, Creighton University, Omaha.* 50

[116] Anh Vo and, **Andrew Ekpenyong**, (2018) Fractional Calculus Modeling of Cell Viscoelasticity Quantifies Drug Response and Maturation. *St Albert's Day, March 22, Creighton University, Omaha.* 110

[117] Allie Bray, Haris Akhter, Catherine Weeder, Michael Mimlitz, Aaron Herridge, Michael Merrick, **Andrew Ekpenyong**, (2018) Post-radiotherapy Migration of Cortical Neurons and Glioblastoma Cells in Vitro. *St Albert's Day, March 22, Creighton University, Omaha.* 113

[118] Aaron Herridge and **Andrew Ekpenyong**, (2018) Simulating Microgravity and Radiation in the Cupola of the International Space Station. *St Albert's Day, March 22, Creighton University, Omaha.* 116

[119] Bong Han Lee, Sindhuja Suresh, **Andrew Ekpenyong**, (2018) Optoelectronic Tuning of Quantum Dots by Biological Cells. *St Albert's Day, March 22, Creighton University, Omaha.* 117

[120] Michael Merrick, Michael Mimlitz, Allie Bray, Haris Akhter, Catherine Weeder, Aaron Herridge, **Andrew Ekpenyong**, (2018) Post-Radiotherapy Migration of HCN2 Cells and its Effect on Metastasis Prior to Cell Death. *St Albert's Day, March 22, Creighton University, Omaha.* 120

[121] Michael Mimlitz, Kaamil Abid, Chisom Nwakama, Devika Prasanth, Bong Han Lee, **Andrew Ekpenyong**, (2018) Effects of Ionizing Radiation on the Mechanosensitivity of Single Cells. *St Albert's Day, March 22, Creighton University, Omaha.* 122

[122] Christopher Landis, Michael Mimlitz, Joe Bamesberger, Mafer Correa, Michael Merrick, **Andrew Ekpenyong**, (2018) Electric Impedance Monitoring of Cell Migration Following Irradiation. *St Albert's Day, March 22, Creighton University, Omaha.* 122 Received FIRST PRIZE, Oral Presentations Category.

Other Abstracts

[123] Sruti Prathivadhi, Nathan Pennington, **Andrew Ekpenyong**, (2015) Modeling Cancer Metastasis through Mechanical Properties Detected by a Microfluidic Microcirculation Mimetic Device. *Poster presentation, Ferlic Research Scholars, Sept 22, Creighton University, Omaha.*

[124] Sruti Prathivadhi, **Andrew Ekpenyong**, (2016) Effects of Chemotherapy-induced Alterations in Cell Mechanical Properties on Cancer Metastasis. *Poster presentation, Ferlic Research Scholars, Sept 20, Creighton University, Omaha.*

[125] Anh Vo, **Andrew Ekpenyong**, (2017) Fractional Calculus to Model Cell Viscoelasticity. *Poster presentation, Ferlic Research Scholars, Sept 19, Creighton University, Omaha.*

[126] Sruti Prathivadhi, **Andrew Ekpenyong**, (2017) Chemotherapy Impedes in Vitrio Microcirculation and Promotes Migration of Leukemic Cells with Impact on Metastasis. *Oral presentation, 13th Annual Honors Day, April 19th, Creighton University, Omaha.*

[127] Anh Vo, **Andrew Ekpenyong**, (2017) Fractional Calculus Modeling of Cell Viscoelasticity. *Oral presentation, 13th Annual Honors Day, April 19th, Creighton University, Omaha.*

Invited Talks *International Conferences*

[128] **Ekpenyong, AE**.Closing the Cancer Care Gap While Advancing Medical Physics and Medicine *Invited Talk, Session on Global Collaborations for Medical Physics Innovations.*. 25th July 2023, 65th Annual Meeting, American Association of Physicists in Medicine, Houston, TX.*Annual Meeting and Exhibition Program*.

[129] **Ekpenyong, AE**.One Person, One Innovation: Mantra for a Quantum Leap in Nigeria's High Tech Industrialization *Keynote Speech, International Conference of the University of Nigeria, Nsukka, UNN,*

Technological Innovation for Holistic Sustainable Development.. 21st Sept 2021, Center for Lion Gadgets and Technologies, Dept of Electronic Engineering, UNN, Nsukka. *Youtube video of keynote speech*.

[130] **Ekpenyong, AE**, Schuermann, M, Man, SM, Achouri, S, Guck, J, et al. Monitoring cell differentiation and infection using Digital Holographic Microscopy. *European Conferences on Biomedical Optics (ECBO)*. 12 May, 2013, Munich, Germany.

[131] **Ekpenyong, AE**, Guck, JR, et al. Viscoelastic properties of differentiating cells evolve to meet tissue-specific functions *Dynamics of Tissues and Multicellular Systems*. 14 Dec 2012, Leipzig, Germany.

Contributed Talks (International Conferences)

[132] **Ekpenyong, AE**, Whyte, GB, Chalut, KJ, Pagliara, S, Guck, JR, et al. Contributions of actin and myosin to creep compliance of blood stem cells during differentiation. *Optical Trapping and Optical Micromanipulation X, SPIE NanoScience and Engineering*. 28 Aug 2013, San Diego, USA.

[133] **Ekpenyong, AE**, Whyte, GB, Lautenschlaeger, F, Guck, JR, et al.Viscoelastic properties of differentiating blood stem cells evolve to suit their functions. *Spring Meeting of the German Physical Society (DPG)*. 15 March 2013, Regensburg, Germany.

[134] **Ekpenyong, AE**,Whyte, GB, Chilvers, ER, Guck, JR, et al. Fate- and function-dependent evolution of cellular mechanical properties during myeloid haematopoiesis. *4th International Congress on Stem Cells and Tissue Formation*. 20 July 2012, Dresden, Germany.

Other Major Professional Talks

[135] **Ekpenyong, AE**. Microfluidics in Biomedical Physics Research *1st Nebraska Microfluidics Symposium*. 16th Oct 2017, Lincoln, NE.

[136] **Ekpenyong, AE**. Science, Technology and Globalization: the Need for Global Ethics *Kripke Center for the Study of Religion and Society*. 17th Feb 2017, Omaha, NE.

[137] **Ekpenyong, AE**. Biomedical Physics Research: from Creighton to Cambridge, to Dresden and Back *2018 Summer Research Institute Colloquium, Health Sciences Multicultural and Community Affairs, Center for Promoting Health and Health Equity*. 3rd August 2018, Creighton University, Omaha, NE.

[138] **Ekpenyong, AE**. COVID19 Response at 100% Free Research Hospital, JUHRI, Afua Site, Ibiono Ibom, Nigeria *Common Ground, Health Sciences Multicultural and Community Affairs, Center for Promoting Health and Health Equity*. 9th April 2021, Creighton University, Omaha, NE.

[139] **Ekpenyong, AE**. Building of Research Hospitals in Nigeria. *Invited Keynote Lecture at the Penn-Ohio Chapter of the American Association of Physicists in Medicine, AAPM. Theme: Building a Legacy, Shaping the Future*. 17th Sept 2022, Embassy Suites by Hilton, Independence, Ohio.

Some Books

[140] **Ekpenyong AE** (2007) *Basics of Physics for Senior Secondary Schools* 3 Vols, Spectrum Books, Ibadan, Nigeria. 777 pages.

[141] **Ekpenyong AE** (2005) *On the Many Faces of AIDS: Biblical, Medical, and Moral Perspectives on HIV/AIDS.* Temavic, Calabar, Nigeria.

[142] Ekpenyong, Andrew E. *Mathematical Physics for Nuclear Experiments.* 2022. ISBN 9780367768522. CRC Press/Taylor and Francis Group. Boca Raton. Fl. 278 Pages. Ordering Information, Amazon

Books in Preparation

[143] Ekpenyong, Andrew E. *Medical Physics Prep for Board Exams.*

Published Theses

[144] **Ekpenyong A** (2012) *Viscoelastic and Optical Properties of Blood Cells: from differentiation to activation and infection.* PhD Dissertation, University of Cambridge, Cambridge, UK.

[145] **Ekpenyong A** (2007) *Hybrid ray optics and continuum mechanics modelling of cell deformation in the optical stretcher.* Master's Thesis, Creighton University, Omaha, USA.

Patents and Patent Applications

[146] **Ekpenyong, A., Thiegs C., Hubbard A., Walter Y., Kramer H., Djam K.** (2022) *Cancer Radiation Therapy with Biocompatible Quantum Dots or Simultaneous Dose Enhancement and Counter-Metastasis* Filed 21st October, 2022. United States Patent and Trademarks Non-Provisional Patent Number: 17970720

[147] **Ekpenyong, A., Nwakama, C.** (2022) *Device for Patient-Specific Prognosis* Filed 20th September, 2022. United States Patent and Trademarks Provisional Patent Number: 63408303

[148] **Ekpenyong, A., Thiegs C., Hubbard A., Walter Y., Kramer H., Djam K.** (2021) *Methods for Simultaneous Dose Enhancement and Counter-Metastasis in Cancer Radiation Therapy* Filed 21st October, 2021. United States Patent and Trademarks Provisional Patent Number: 63270375

[149] **Ekpenyong, Andrew and Mimlitz, Michael** (2019) *Physical Methods to Enhance Cell Attachment and Migration* Filed 15th January, 2019. United States Patent and Trademarks Provisional Patent Number: 62960391

Grants Received Since 2014)

1. Creighton University Success in Science Funds, Physics Dept, *Microfluidic Microcirculation Mimetic*, 2014-2015, USD 5,000. **Role: Principal Investigator**

2. Creighton University Success in Science Funds, Physics Dept, *Impact of Chemotherapy on Cell Mechanics*, 2015-2016, USD 10,000. **Role: Principal Investigator**

3. Creighton University Success in Science Funds, Physics Dept, *Radiotherapy and Cell Mechanical Properties*, 2016-2017, USD 5,000. **Role: Principal Investigator**

4. Ferlic Scholarship for Summer Undergraduate Research, 2015, USD 5,000. **Role: Mentor of Undergraduate Recipient, Sruti Prathivadhi.**

5. Ferlic Scholarship for Summer Undergraduate Research, 2016, USD 5,000. **Role: Mentor of Undergraduate Recipient, Sruti Prathivadhi.**

6. CURAS Summer Undergraduate Research Scholarship, 2017, USD 5,000. **Role: Mentor of Undergraduate Recipient, Michael Mimlitz.**

7. Creighton University College of Arts and Sciences, Startup Grant, *Translational Biomedical Physics Research Group* 2017-2019, USD 188,000. **Role: Principal Investigator.**

8. Creighton University Center for Undergraduate Research and Scholarship, Summer Faculty Research Fellowship, *Physics of Cancer: Impact of Radiotherapy on Cell Mechanical Properties*, 2019, USD 10,000. **Role: Principal Investigator**

9. Creighton University Health Science Strategic Investment Fund, *Role of Kinocilia-Specific Proteins in Zebrafish Vestibular Function*, 1st July 2016-30th June 2019. PI: Dr Ken L. Kramer, Dept of Biomedical Sciences. **Role: Co-Investigator**

10. Clare Boothe Luce Research Scholarship, USD 5750, part of Clare Boothe Scholarship for the 2019-2020 academic year covering full tuition, bed, board and books. **Role: Mentor of Undergraduate Recipient, Chisom Nwakama.**

11. Clare Boothe Luce Research Scholarship, USD 5750, part of Clare Boothe Scholarship for the 2020-2021 academic year covering full tuition, bed, board and books. **Role: Mentor of Undergraduate Recipient, Chisom Nwakama.**

12. Ferlic/CURAS Scholarship for Summer Undergraduate Research, 2021, USD 5,000. **Role: Mentor of Undergraduate Recipient, Sukhman Virdi.**

13. Nebraska Tobacco Settlement Biomedical Research Development Fund/Creighton University *LB692* March-June, 2021, USD 66,500. **Role: Principal Investigator.**

14. Ferlic/CURAS Scholarship for Summer Undergraduate Research, 2022, USD 5,000. **Role: Mentor of Undergraduate Recipient, Jayce Hughes.**

15. Creighton University Center for Undergraduate Research and Scholarship, 2022 Magis! *Investigatio* Research Award (MIRA), *Physics of Cancer: Role of Cell Mechanics in Chemotherapy-Induced Metastasis*, May 1, 2022 to April 30, 2023, USD 5,000. **Role: Principal Investigator**

16. NASA's Human Research Program, HRP, Travel Scholarship to NASA HRP Iinvestigators Workshop and Symposium, Galveston, TX, Feb 7-9, 2023 *Translational Research for Space Health, TRISH* Diversity

Program, B-SURE, *Boosting Spaceflight Underrepresented Equity*, Oct, 2022 **Principal Investigator and Awardee**

Grants Under Review

1. NASA IDEAS Summer Faculty Fellowship. "Microgravity as a Tool for the Physics of Cancer". USD 21,000. March 3rd, 2023.

Grants Not Funded

1. National Institutes of Health, U54 Cooperative Agreement, FOA PAR-22-203, TRDC-POCTRN for Global Health Anchored at Creighton University, 30th Sept., 2022. USD 5Million, with over 20 CO-PIs in 5 US Institutions and Global Collaborators. PI: Prof Sade Kosoko-Lasaki. **Role: Co-Investigator and Lead, Technology Core**

2. LB 692 New Initiative Grant. *Physical Oncology: The Role of Cell Mechanics in Chemotherapy-Induced Metastasis.* 22nd April 2022, USD 74,600. **Role: Principal Investigator**

3. National Institutes of Health, Academic Research Enhancement Award (R15), FOA PAR-21-155. *Physics of Cancer: Role of Cell Mechanics in Chemotherapy-Induced Metastasis.* 25th Feb 2022, USD 435,999. **Role: Principal Investigator**

4. National Institutes of Health, Science Education Partnership Award, SEPA, R25, *Creighton University-Science Education Partnership Award, CU-SEPA*, 17th July 2020, USD 300,000. PI: Prof Sade Kosoko-Lasaki **Role: Co-Investigator**

5. National Institutes of Health, Academic Research Enhancement Award (R15), FOA PAR-I8-714. *Physics of Cancer: Impact of Radiotherapy on Cell Mechanics and Cancer Metastasis.* 25th Feb 2019, USD 363,750. **Role: Principal Investigator**

6. Creighton University, Presidential Summer Faculty Research Fellowship, *Physics of Cancer: Impact of Radiotherapy on Cell Mechanical Properties*, 2018, USD 5,000. **Role: Principal Investigator**

7. National Institutes of Health, Science Education Partnership Award, SEPA, R25, *Creighton University-Science Education Partnership Award, CU-SEPA*, 20th Nov, 2017, USD 300,000. PI: Prof Sade Kosoko-Lasaki **Role: Co-Investigator**

8. Association of Physicists in Medicine Seed Grant, *Impact of Radiotherapy on Cell Mechanical Properties*, 15th April, 2017, USD 25,000. **Role: Principal Investigator**

9. Development Research Project Program (DRPP), INBRE, *Mechanotransduction in Leukocytes in vitro and in vivo*, USD 108,530.00, Jan 27th, 2017 **Role: Principal Investigator**

PROFESSIONAL SERVICES

Editorial Board

1. (Editorial Board Member), MDPI (Multidisciplinary Digital Publishing Institute) Journal, **Life**. 2020 till present.

Manuscript Reviewer (Peer-Reviewer)

1. *Optical Engineering, SPIE*, **7 reviews**, 2013-2018. Impact factor: 1.082.
2. *Optics Letters, OSA*, **2 reviews**, 2014, 2016. Impact factor: 3.589.
3. *European Biophysics Journal*, **1 review**, 2013. Impact factor: 2.219.
4. *PLoS ONE*, **1 review**, 2013. Impact factor: 3.23.
5. *Journal of Medical Imaging*, **1 review**, 2017. Impact factor: 2.31.
6. *Biomedical Physics and Engineering Express*, **1 review**, 2017.
7. *Physical Biology*, **1 review**, 2017. Impact factor: 1.837.
8. *Oncotargets and Therapy*, **1 review**, 2018. Impact factor: 2.31.
9. *Drug Design, Development and Therapy*, **1 review**, 2019. Impact factor: 2.94.
10. *Life*, MDPI (Multidisciplinary Digital Publishing Institute) Journal, **2 reviews**. 2020-2021. Impact factor: 2.99.
11. *Nanotechnology*, Institute of Physics (IOP) Science Journal, **1 review**. 2020. Impact factor: 3.55.
12. *Advanced Photonics Research*, Wiley-VCH, **1 review**. 2020. Impact factor: new journal awaiting I.F.
13. *International Journal of Molecular Sciences*, MDPI (Multidisciplinary Digital Publishing Institute) Journal, **1 review**. 2020. Impact factor: 4.556.

Textbook Reviewer

1. *Jan-Markus Schwindt, Conceptual Basis of Quantum Mechanics, Springer-Nature*, Content Review, Dec. 2017
2. *Freedman, College Physics, Macmillan*, 2e Pre-Revision Review, Jan. 2019

NIH Grants Reviewer

- NIH Reviewer, Sept - Nov 2022. ZRG1 G15-B(20): Fellowships, Imaging, Surgery and Bioengineering, reviewed 5 funding proposals. (Scientific Review Officer: Dr. Heidi Friedman)
- NIH Reviewer, Dec 2018. NIH Anonymization Study, January 2019, reviewed 3 funding proposals. (Scientific Review Officer: Dr. Bidyottam Mittra)

- Early Career Reviewer for National Institutes of Health, NIH: assigned to review grant proposals submitted to the Enabling Bioanalytical and Imaging Technologies (EBIT) panel., March, 2016, Reviewers' Meeting, San Francisco, June 22-24, 2016, reviewed 5 funding proposals (Scientific Review Officer: Dr Kennth Ryan).

Conference Organization

- Chair, Session C3, Biomedical Sciences, Nebraska Academy of Sciences, 132nd Annual Meeting, April 22nd, 2022, Lincoln, NE.
- Co-Organizer, 2nd Nebraska Microfluidics Symposium, Creighton University, October 15, 2018, Omaha (about 30 participants from 4 NE Universities including University of Nebraska, Lincoln, University of Nebraska, Omaha, University of Nebraska, Kearney, and Creighton University.
- Co-Chair, Session on Mechanosensation, Biophysical Society 61st Annual Meeting, Feb 14, 2017, New Orleans.

Professional Memberships

- American Physical Society member, 2006-present
- Sigma Pi Sigma, Physics Honor Society member, inducted 2007
- Optical Society of America member, 2007- present
- IEEE member, 2007-2012
- Science Teachers' Association of Nigeria, member, 2003-present
- Institute of Physics member, 2009-2012
- American Association of Physicists in Medicine, (student member, 2009-2011), full member, 2016-present
- German Physical Society member, 2012-2015

Service to Physics Department

1. Member, Thesis Committee, Kyle Rodenhausen, Master's Thesis, 2018. **Completed, Medical Physics**
2. Member, Thesis Committee, Laura Aumen, Master's Thesis, 2018. **Completed, Medical Physics**
3. Preparation of Curriculum for the establishment of Master's Program in Medical Physics (assisted current Program Director, Dr Michael Nichols), 2014-2016. **Completed, Medical Physics Program now running and CAMPEP approved**
4. Thesis Supervisor and Chairperson, Thesis Committee, Bong Han Lee, Master's Thesis, 2016-2018. **Completed, Physics**
5. Thesis Supervisor and Chairperson, Thesis Committee, Kimal Honour Djam, Master's Thesis, 2018-2020. **Completed, Medical Physics**

6. Thesis Supervisor and Chairperson, Thesis Committee, Caleb Thiegs, Master's Thesis, 2019-2021. **August 2021 completion target, Medical Physics**

7. Thesis Supervisor and Chairperson, Thesis Committee, Anne Hubbard, Master's Thesis, 2020-2022. **Completed, Medical Physics**

8. Thesis Supervisor and Chairperson, Thesis Committee, Yohann Walter, Master's Thesis, 2020-2022. **Completed, Medical Physics**

9. Thesis Supervisor and Chairperson, Thesis Committee, Melanie Schwengler, Master's Thesis, 2021-ongoing. **Medical Physics**

10. Thesis Supervisor and Chairperson, Thesis Committee, Bayode Ibironke, Master's Thesis, 2022-ongoing. **Medical Physics**

11. Proctor, Comprehensive Examination for Graduate Students. **Part 3, Jan 2017, August 2017, August 2018, Jan 2019, Aug 2019, Jan 2020, Aug 2021, June 2022**

12. Proctor, Comprehensive Examination for Graduate Students. **Part 2, Aug. 2022, Jan 2023**

13. Proctor, Comprehensive Examination for Graduate Students. **Part 1, Aug. 2020, Jan 2021, June 2021**

14. Academic Advisor, Undergraduate Majors (Biomedical Physics) 2018 to present. **Advisees: Allie Bray (2019), Samantha Lee (LA), Olivia Salas (2022), Melanie Schwengler (2022), Ashton Hagen (2024), Timothy Nichols (2024), Jayce Hughes (2025)**

15. Graduate Medical Physics Advisory Committee, 2018. **Role: Vice Chair and Member, 2018 to present**

16. CURAS Research Day, January 2016. **Role: Faculty representative (To showcase department research/scholarly work to undergraduate students)**

17. Graduate Student Orientation, August 2014, 2015, 2016. **Role: Faculty presenter on lab management**

18. Graduate Student Orientation, August 2017, 2018, 2019, 2020, 2021, 2022. **Role: Faculty co-presenter on diversity**

19. Resuscitation of the course Nuclear Instruments and Methods (NIM), to serve our Physics, Medical Physics and Biomedical Physics students. **Role: Instructor, 2015, 2017, 2019, 2021** (assisted by Prof Sam Cipolla, Emeritus Professor).

20. Development and teaching of the new course: Physics of Radiation Therapy, Phy 661. **Role: Instructor, Fall 2018**

21. Development and teaching of the course: Radiation Dosimetry and Radiation Protection, Phy 662, for the first time in the department. **Role: Instructor, Spring 2017, 2019, 2021, 2023**

22. Jesuit Universities' Physics Faculty Retreat, Loyola University Chicago, October, 2016. **Role: Attendee and Presenter on Biomedical Physics for Undergraduate Curriculum and Medical Physics for Graduate Curriculum**

23. Jesuit Universities' Physics Faculty Retreat, Loyola University Chicago, October 20th-22nd, 2017. **Role: Attendee and Presenter on Biomedical Physics for Undergraduate Curriculum**

24. Jesuit Universities' Physics Faculty Retreat, Creighton University Omaha, November 9-11, 2019. **Role: Attendee and co-Presenter on Biomedical Physics for Undergraduate Curriculum**

25. CURAS Research Day, January 2017. **Role: Faculty representative (To showcase department research/scholarly work to undergraduate students)**

26. Annual Department of Physics Retreat, Carol Joy Holling Camp, Jan 2015 **Role: Attendee and new faculty presenter**

27. Annual Department of Physics Retreat, Carol Joy Holling Camp, Jan 2016 **Role: Attendee and Panelist on Prejudice**

28. Annual Department of Physics Retreat, Carol Joy Holling Camp, Jan 31st-Feb 1st, 2019 **Role: Attendee**

29. Annual Department of Physics Retreat, Carol Joy Holling Camp, Jan 30th-31st, 2020 **Role: Attendee**

30. Annual Department of Physics Picnic (Physnic), September, 2017 at Elmwood Park **Role: Attendee**

31. Annual Department of Physics Picnic (Physnic), Saturday, September 15th, 2018 at Elmwood Park **Role: Attendee**

32. Annual Department of Physics Picnic (Physnic), Saturday, September 21st, 2019 at Elmwood Park **Role: Attendee**

33. CURAS Research Day, January 2019. **Role: Faculty representative (To showcase department research/scholarly work to undergraduate students)**

34. Nomination of colleagues for awards: Ferlic Undergraduate Research Mentor Award; Heaney Graduate Research Mentor, Award, Feb 14th, 2020 **Role: nominator, solicitor and assembler of support letters**

Service to College of Arts and Sciences and entire Creighton University

1. Member, Thesis Committee, Susmit S. Mhatre, Master's Thesis, 2023. **Dept of Pharmacy Sciences, School of Pharmacy and Health Professions**

2. Invited Speaker, Pi Kappa Phi Development Talk Series. "Faith and Science: A Living Witness". **16th April 2023**. Creighton University Chapter.

3. Invited Speaker, Departmental Seminar, "Enhancing Nanoparticle-Mediated Chemo- and Immunoradiotherapy through Physics of Cancer." School of Pharmacy and Health Professions **18th Nov. 2022**

4. Judge for Oral Presentations, St Albert's Day (University Research Week), Creighton University. **April 19th and 20th, 2022**.

5. Member, Thesis Committee, Namratha Turuvekere Vittala Murthy, Master's Thesis, 2021. **Dept of Pharmacy Sciences, School of Pharmacy and Health Professions**

6. College of Arts and Sciences, Virtual Admitted Students' Day April 11, 2021 **Role: Showcasing of Laboratory and Research to admitted students and the parents. Question and Answers Session**.

7. Breakout Session Speaker, A Model for Improving Health Equity: 100% Free Research Hospital in Rural Nigeria, with Mobile Clinics and US-based Telemedicine, Creighton University. **15th Feb. 2020**

8. Introduction to College Life, RSP 101. **Role: Instructor, Fall, 2018, Spring 2019, Fall 2022, Spring 2023**

9. Member, Thesis Committee, Gayathri Heenatigala Palliyage, Master's Thesis, 2019. **Dept of Pharmacy Sciences, School of Pharmacy and Health Professions**

10. Invited Speaker, Creighton University Global Health Midwest Conference. Using Physics to Fight Cancer. **14th-15th Feb. 2019**

11. Creighton University Visit Days (Bluejay Sunday), Sunday, Sept 22nd, 2019 **Role: Presenter, Explore Majors, Special Programs and Opportunities Fair**.

12. Creighton Undergraduate Admission Telephone Follow Up Initiative. **Role: Faculty Caller, Fall, 2018**. Called parents/guardians of 15 freshmen assigned.

13. College of Arts and Sciences, Admitted Students' Days, 2018, 2019 **Role: Showcasing of Laboratory and Research to admitted students and the parents**.

14. Member, Planning Committee for Africa Rising Week. **Sept 2017**. Chief Celebrant at the concluding Mass.

15. Reviewer, Summer Undergraduate Research and Creative Projects Fellowship. **Feb. 2017**

16. Invited Speaker, Relay for Life Fight Back Series. Using Physics to Fight Cancer. **27th Feb. 2017**

17. Keynote Speaker, Heroic Leadership, Freshman Leadership Seminar, Creighton University. **28th Nov. 2017**

18. Judge for Poster Presentation, St Albert's Day, Creighton University. **April 2016**.

19. Member, Planning Committee for Africa Rising Week. **Sept 2016**. Preacher at the concluding Mass.

Service to Community and Humanity

1. **Founder, Director, 3rd October 2014 to present**, *Friends of Joseph Ukpo Hospitals and Research Institutes, Omaha, Nebraska, USA*, a nonprofit corporation and a public charity with Tax Exempt Status under section 501(c)(3) of the Internal Revenue Code of the United States of America, whose mission is to bring the benefits of modern medical science to individuals in Southeastern Nigeria. This means fund-raising for JUHRI, including my own donations (I donate over two-thirds of my salary every month since 2013). IRS EIN is 30-0842806. **Amount raised: Jan 2013 to July 2023, USD 720,000.00, in addition to donated hospital equipment/ambulances worth about USD 500,000.00. Milestones: 1. Construction and Commisssioning of Hospital 1st Site; 2. Construction and Commissioning of Hospital 2nd Site; 3. Free medical care to all patients. 4. Free training of Seamstresses at Skills Acquisition Center**.

2. **Founder, Director-General, 24th October 2010 to present**, *Joseph Ukpo Hospitals and Research Institutes, JUHRI, Catholic Ecclesiastical Province of Calabar, Nigeria*, a network of research hospitals being built from scratch in rural areas where abject poverty is high. The first site (Afua) was commissioned on June 6th, 2018 and provides 100% free medical care to all patients. Services include extensive mobile clinics, in-patient and especially out-patient care involving surgery, ultrasound diagnostics, X-Ray diagnostics, lab tests, drugs, nutritious food to paediatric patients, etc. Nigeria's Corporate Affairs Commission Registration Number: CAC/IT/No 122299. **Milestones up to March 2023: (a) 15,134 patients given free care at Hospital 1st Site; (b) 2,039 patients given free care at Hospital 2nd Site; (c) 3,500 patients given free care through mobile clinics; (c) Free training of seamstresses at Skills Acquisition Center; (d) Commencement of Catering Training and Auxiliary Nurse Training as Skills Acquisition Center**.

3. **Mentor, 2013 to present**, *OXCAMP Africa, The Oxbridge Africa Mentorship Programme*. The program exists in over ten African countries. It identifies the best young talents in Africa and mentors these talents to become effective leaders in their chosen fields.

4. **Founder, Director, 2018 to present**, *Archbishop Joseph Ekuwem Pastoral Foundation, JEPF, Catholic Archdiocese of Calabar, Nigeria*,

a foundation for providing financial assistance to Catholic Priests and other Pastoral Agents who work in poor rural areas of the Archdiocese of Calabar, Nigeria.

5. **Founder, Director, 2003 to present**, *Science and Technology Network for Human Advancement, Calabar, Nigeria*, a network for inspiring humane scientific inventions and technology, leading to human development.

6. **Founder, Director, 2018 to present**, *Sacred Heart Industrial Institute, in the Abuja Graduate School, Abuja, Nigeria*, an incubation for a future Sacred Heart Industrial University, Abuja, Nigeria, to spearhead a massive industrialization of Africa's most populous nation and take sub-Saharan Africa out of poverty. MoU signed 25th July 2018.

Selected Awards, Prizes and Honors since 2014

- Selected by the American Association of Physicists in Medicine (AAPM) as a research mentor for recipients of the 2021 AAPM national undergraduate summer research fellowship. The AAPM Program "matches exceptional students with exceptional medical physicists, many who are faculty at leading research centers." My reseach entry for the selection: *Nanoparticle-Mediated Radiation Therapy.*
- Recipient, 2019 Creighton University Summer Faculty Research Fellowship, for proposal *Physics of Cancer: Impact of Radiotherapy on Cell Mechanics and Cancer Metastasis*
- Faculty Advisor, Outstanding Student Poster (to Sruti Prathivadhi), *Mathematically Modeling Cancer Metastasis Through Mechanical Properties Detected By A Microfluidic Microcirculation Mimetic*, Mathematical Association of America, Washington DC, 2017
- Faculty Travel Award, College of Arts and Sciences, for attendance and presentation at Biophysical Society meeting, New Orleans, 2017
- Faculty Travel Award, College of Arts and Sciences, for attendance and presentation at American Association of Physicists in Medicine, Nashville, 2018
- Keynote Speaker, 2018 Summer Research Colloquium, Center for Promoting Health and Health Equity, Creighton University, August 3, 2018
- Featured in *Omaha World Herald*, of December 9, 2014, **Creighton Physicist aided research on physical changes caused when salmonella attacks.**

Selected Awards and Prizes during Post-Graduate and Undergraduate Studies

- Commonwealth Cambridge Trust Bursary Award for 3 years, University of Cambridge, UK.£18000.00, July 2009 to October 2012

- Duke of Edinburgh Scholarship at St Edmund's College, University of Cambridge, UK. £6000.00, July 2009 to October 2012
- Scholarship covering 75% of all costs (travel, insurance and lodging) for attendance at the 12th Vatican Observatory Summer School in Observational Astronomy and Astrophysics on the *Chemistry of the Universe*, 30th May to 25th June 2010 at the Vatican Observatory in the Pontifical Villas of Castel Gandolfo, Italy.
- Tutorial Award for Travel, St Edmund's College, University of Cambridge, UK. March 8, 2010 (£275.00)
- St Edmund's Commonwealth and Overseas Studentship, University of Cambridge, UK. (£1000.00), Nov 2009
- Best Poster Award, Biological and Soft Systems Research Day, Cavendish Laboratory, Department of Physics, University of Cambridge, UK. Oct, 2010.
- Recipient of a graduate teaching assistantship, Department of Biomedical Physics, East Carolina University, July 2008 to July 2009
- Superior Scholastic Achievement Citation, Graduate School, Creighton University, March 29, 2008
- Graduate Award for Outstanding Research in Physics, Creighton University, Jan. 2008
- Recipient of a graduate teaching assistantship, Department of Physics, Creighton University, 2007
- Recipient of a graduate research assistantship from the Department of Biomedical Sciences, School of Medicine, Creighton University, for research on Cellular Biomechanics using the Optical Stretcher, 2006, under Dr M. Nichols
- Creighton Students' Union Graduate Travel Award for presentation of research paper at the Optical Society of America Annual Meeting, San Jose, CA, 2007
- Academic Award in Theology, 1st Position, 2002/03
- Academic Award in Theology, 1st Position, 2001/02
- Academic Award in Theology, 1st Position, 2000/01
- Academic Award in Theology, 1st Position, 1999/2000
- Academic Award in Philosophy, 1st Position, 1997/98
- Academic Award in Philosophy, 1st Position, 1996/97
- Academic Award in Philosophy, 1st Position, 1995/96
- Academic Award in Philosophy, 1st Position, 1994/95

Selected Scholarships, Awards and Prizes during Secondary School Years

- Don Giuseppe Zottarel Post Secondary Scholarship, 1994.
- State House Reception and Scholarship Award by the Deputy Governor, Mrs. Cecilia Ekpenyong, for outstanding Academic and Scientific Achievements, November 1993
- *Plant Collector of the Year Award* by the Department of Biological Sciences, University of Calabar, 16th July 1992
- 2nd National Prize and Medal, International Postal Union Letter- writing Competition, Lagos, World Post Day Celebration, 9th September 1991
- Certificate of Merit, Consolation Prize for Essay Competition, World Environment Day Celebration, 5th June, 1992, by Cross River Ministry of Works and Transport
- Certificate of Merit, 1st Prize, Essay Competition, World Environment Day Celebration, 5th June, 1993 by Department of Lands, Governor's Office, Calabar.
- 1st Prize Trophy and Certificate of Merit, Prize of the Best Poem, World Environment Day Celebration, 5th June, 1993, by Department of Lands, Governor's Office, Calabar.
- Recognition and Scholarship Award by Chairperson, Post-Primary Schools Boards, for outstanding academic and literary performances, July 1992.
- Emmanuel Ntiti Memorial Scholarship for 2nd All-Round Best Student, SS1, January 31st 1991
- Dr. & Mrs. Arikpo B. Arikpo Scholarship for 2nd All-Round Best Student, SS II, 1992
- Robert M. Etta Scholarship for 2nd All-Round Best Student, SS III, January 31st 1993

Secondary School Teaching and Outreach Experience

- Physics Teacher, Practical Chemistry Teacher (quantitative and qualitative analysis for examination candidates), Stella Maris Prep. Seminary, Calabar, 2003-2005
- Teacher of Mathematics, Physics and Chemistry; Organizer of Junior Engineers, Technicians and Scientists (JETS) Club, Mary Immaculate Girl's Juniorate, Calabar, Nigeria, 1998/99
- Private Tutor to West African School Certificate Examination Candidates in Mathematics, Chemistry and Physics, 1993-2003

Employment History

- Associate Professor of Physics, Creighton University, USA, 2022 to present
- Assistant Professor of Physics, Creighton University, USA, 2017-2022
- Resident Asst Professor of Physics, Creighton University, USA, 2014-2017
- Post-doctoral scientist, Technical University, Dresden, Germany, 2012-2014
- Supervisor, Part III Project, Univ. of Cambridge, 2010-2011 session
- Supervisor, Part II, Soft Condensed Matter, Univ. of Cambridge, Lent 2011
- Supervisor, Part IB Physics, Univ. of Cambridge, 2010-2011 session
- Graduate Teaching Assistant, East Carolina University, USA, July 2008-July 2009
- Graduate Teaching Assistant, Creighton University, USA, Jan. 2007-Dec. 2007
- Graduate Research Assistant, Creighton University, USA, Jan. 2006-Dec. 2006
- Vice-Rector and Bursar Stella Maris Prep. Seminary, Calabar, Nigeria, 2003-2005
- High School Physics Teacher, Stella Maris Prep. Seminary, Calabar, Nigeria, 2003-2005

Software Skills

Computer Programming:

- C and C++
- Matlab,
- Mathematica
- Comsol Multiphysics

References Available to Contact

- Prof Sam Cipolla, Professor Emeritus, Department of Physics, Creighton University (email: samcip@creighton.edu)
- Prof Dr Jochen Guck, (Professor), Director, Max Planck Institute for the Science of Light and Max-Planck-Zentrum fur Physik und Medizin, Erlangen, Germany (email: jochen.guck@mpl.mpg.de) ⋆ Prof Dr Guck was my PhD supervisor and Post-doctoral PI

- Dr Kevin Chalut, Royal Society Research Fellow and Group Leader, Cavendish Laboratory, Department of Physics, University of Cambridge (email: kc370@cam.ac.uk) ⋆ Dr Chalut supervised part of my Ph.D research in the University of Cambridge
- Prof Michael Nichols, Professor, Department of Physics, Creighton University (email: mnichols@creighton.edu) ⋆ Prof Nichols was my M.S. thesis supervisor
- Prof Pietro Cicuta, Professor, Department of Physics, University of Cambridge (email: pc245@cam.ac.uk) ⋆ Prof Cicuta was my PhD internal examiner

Extra-curricular activities and recreation

- Playing organ (Keyboard)
- Singing and listening to classical music (favorites: Handel, Beethoven, Bach, Hayden, Mozart) including live orchestra (favorites: Omaha Symphony currently, King's College Choir Cambridge, 2009-2012)
- Playing chess
- Playing soccer (former member of St Edmund's College Men Team, University of Cambridge, and the Bees, a research group team within the Cavendish Laboratory, Department of Physics, University of Cambridge).
- Taking walks/meditation along trails and parks such as Carter Lake, Omaha.

Other Information

Ordained a Catholic priest, Calabar, Nigeria, Aug. 16th, 2003. In good standing with the Roman Catholic Church through the Catholic Archdiocese of Omaha, USA, and the Catholic Archdiocese of Calabar, Nigeria. I reside at, offer Masses, hear Confessions, etc, at St Mary Magdalene Catholic Church, 109 South 19th St, Omaha, NE 68102. My homilies address issues of *science and theology*, *faith and reason*, *science, technology and society*, *healthcare and salvation*, etc, and since March 2020, these homilies are posted every Saturday on my Facebook page: *Facebook-AndrewEkpenyong*.