Stanford

Nataliya Kovalchuk

Clinical Associate Professor, Radiation Oncology - Radiation Physics

Bio

BIO

Education:

2002 - B.S., Physics, Drohobych State University, Ukraine

2004 - M.S., Physics, Minnesota State University, Mankato, MN

2008 - Ph.D., Applied Physics, University of South Florida (H. Lee Moffitt Cancer Center and Research Institute), Tampa, FL

2010 - Medical Physics Residency, Mayo Clinic, Rochester, MN

Academic Appointments:

2010 - 2015 - Instructor, Harvard Medical School, Massachusetts General Hospital/Boston Medical Center, Department of Radiation Oncology, Boston, MA

2015 - 2019 - Clinical Assistant Professor, Stanford University, Department of Radiation Oncology, Stanford, CA

2019 - present - Clinical Associate Professor, Stanford University, Department of Radiation Oncology, Stanford, CA

2019 - present - Adjunct Associate Professor, MD Anderson Cancer Center/University of Texas, Houston, TX

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Radiation Oncology - Radiation Physics

HONORS AND AWARDS

- Medical Physics Teaching Award, Radiation Oncology Department, Stanford, Stanford (2017)
- ARRO Educator of the Year Award by Harvard Radiation Oncology Residency Program, ARRO (2014)
- Quality Improvement Award at Boston Medical Center, Boston Medical Center (2013)
- Resident Travel Grant Award for the 2009 American Brachytherapy Society (ABS) Annual Meeting, ABS (2009)
- Boutzoukas Radiology Research Award, H. Lee Moffitt, Moffitt Cancer Center (2006)
- Midwestern Association of Graduate Schools Distinguished Thesis Competition Award, MAGS (2005)
- MSU Best Thesis of the Year Award, MSU (2004)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- NRG Physics HN committee, liaison (2018 - present)
- COG Workgroup on pediatric TBI, member (2018 - present)
- AAPM MP3.0 Committee, member (2018 - present)
- COG Physics Committee, member (2017 - present)

- NRG Physics Committee, member (2017 - present)
- ASTRO, member (2010 - present)
- AAPM, member (2008 - present)

Research & Scholarship

CLINICAL TRIALS

- De-intensified Radiation Therapy With Chemotherapy (Cisplatin) or Immunotherapy (Nivolumab) in Treating Patients With Early-Stage, HPV-Positive, Non-Smoking Associated Oropharyngeal Cancer, Recruiting

Publications

PUBLICATIONS

- **Importance of a Culture Committee for Boosting Morale and Maintaining a Healthy Work Environment in Radiation Oncology.** *Advances in radiation oncology*
  Gutkin, P. M., Minneci, M. O., Valenton, J., Kovalchuk, N., Chang, D. T., Horst, K. C.
  2020
- **A preliminary report of gonadal-sparing TBI using a VMAT technique.** *Practical radiation oncology*
  Blomain, E. S., Kovalchuk, N., Neilsen, E., Skinner, L., Hoppe, R. T., Hiniker, S. M.
  2020
- **Successful Full-term Pregnancies After High-dose Pelvic Radiotherapy for Ewing Sarcoma: A Case Report.** *Journal of pediatric hematology/oncology*
  Gutkin, P. M., Chen, E. L., Miller, C. J., Donaldson, S. S., Kovalchuk, N., Callejas, M. J., Hiniker, S. M.
  2019
- **Incorporating dosimetric features into the prediction of 3D VMAT dose distributions using deep convolutional neural network** *PHYSICS IN MEDICINE AND BIOLOGY*
  Ma, M., Kovalchuk, N., Buyyounouski, M. K., Xing, L., Yang, Y.
  2019; 64 (12)
- **Incorporating dosimetric features into the prediction of 3D VMAT dose distributions using deep convolutional neural network.** *Physics in medicine and biology*
  Ma, M., Kovalchuk, N., Buyyounouski, M. K., Xing, L., Yang, Y.
  2019
- **Attention-aware fully convolutional neural network with convolutional long short-term memory network for ultrasound-based motion tracking** *MEDICAL PHYSICS*
  Huang, P., Yu, G., Lu, H., Liu, D., Xing, L., Yin, Y., Kovalchuk, N., Xing, L., Li, D.
  2019; 46 (5): 2275–85
- **Attention-aware Fully Convolutional Neural Network with Convolutional Long Short-Term Memory Network for Ultrasound-Based Motion Tracking.** *Medical physics*
  Huang, P., Yu, G., Lu, H., Liu, D., Xing, L., Yin, Y., Kovalchuk, N., Xing, L., Li, D.
  2019
- **Dosimetric features-driven machine learning model for DVH prediction in VMAT treatment planning** *MEDICAL PHYSICS*
  Ma, M., Kovalchuk, N., Buyyounouski, M. K., Xing, L., Yang, Y.
  2019; 46 (2): 857–67
- **Optimizing efficiency and safety in external beam radiotherapy using automated plan check (APC) tool and six sigma methodology.** *Journal of applied clinical medical physics*
  Liu, S., Bush, K. K., Bertini, J., Fu, Y., Lewis, J. M., Pham, D. J., Yang, Y., Niedermayr, T. R., Skinner, L., Xing, L., Beadle, B. M., Hsu, A., Kovalchuk, et al
  2019; 20 (8): 56–64
- **Dosimetric Features-Driven Machine Learning Model for DVHs Prediction in VMAT Treatment Planning.** *Medical physics*
  Ma, M., Kovalchuk, N., Buyyounouski, M. K., Xing, L., Yang, Y.
  2018

- **Liver** *Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy*
  Qian, Y., Weiner , J., Moding, E., Kovalchuk, N., Koong, A., Hong, T., Chang, D.
  Demos Medical.2018

- **Machine Learning Applications in Medical Dosimetry** *Recent Advancements and Applications in Dosimetry*
  Kovalchuk, N., Xing, L.
  Nova Publishers.2018

- **Dosimetry and Physics Quality Assurance** *Gastrointestinal Malignancies: A Practical Guide on Treatment Techniques*
  Kovalchuk, N., Niedermayr, T., Russo, S., Chang, D.
  Springer.2018

- **Stereotactic body radiotherapy for pediatric hepatocellular carcinoma with central biliary obstruction** *PEDIATRIC BLOOD & CANCER*
  Hiniker, S. M., Rangaswami, A., Lungren, M. P., Thakor, A. S., Concepcion, W., Balazy, K. E., Kovalchuk, N., Donaldson, S. S.
  2017; 64 (6)

- **Stereotactic body radiotherapy for pediatric hepatocellular carcinoma with central biliary obstruction** *PEDIATRIC BLOOD & CANCER*
  Hiniker, S. M., Rangaswami, A., Lungren, M. P., Thakor, A. S., Concepcion, W., Balazy, K. E., Kovalchuk, N., Donaldson, S. S.
  2017; 64 (6)

- **Postmastectomy Radiotherapy with and without Reconstruction** *Radiation Therapy Techniques and Treatment Planning for Breast Cancer.*
  Horst, K., Kovalchuk, N., Marquez, C.
  Springer.2016

- **Optimizing efficiency and safety in a radiation oncology department through the use of ARIA 11 Visual Care Path** *PRACTICAL RADIATION ONCOLOGY*
  Kovalchuk, N., Russo, G. A., Shin, J. Y., Kachnic, L. A.
  2015; 5 (5): 295–303

- **Clinical and treatment factors associated with vaginal stenosis after definitive chemoradiation for anal canal cancer** *PRACTICAL RADIATION ONCOLOGY*
  Mirabeau-Beale, K., Hong, T. S., Niemierko, A., Ancukiewicz, M., Blaszkowsky, L. S., Crowley, E. M., Cusack, J. C., Drapek, L. C., Kovalchuk, N., Markowski, M., Napolitano, B., Nyamwanda, J., Ryan, et al
  2015; 5 (3): E113–E118

- **Radiotherapy Planning** *PET CLINICS*
  Minh Tam Truong, Kovalchuk, N.
  2015; 10 (2): 279–96

- **Volumetric tumor burden and its effect on brachial plexus dosimetry in head and neck intensity-modulated radiotherapy** *MEDICAL DOSIMETRY*
  Romesser, P. B., Qureshi, M. M., Kovalchuk, N., Minh Tam Truong
  2014; 39 (2): 169–73

- **Correlating planned radiation dose to the cochlea with primary site and tumor stage in patients with head and neck cancer treated with intensity-modulated radiation therapy** *MEDICAL DOSIMETRY*
  Zhang, J., Qureshi, M. M., Kovalchuk, N., Truong, M.
  2014; 39 (1): 88–92

- **A quantitative assessment of volumetric and anatomic changes of the parotid gland during intensity-modulated radiotherapy for head and neck cancer using serial computed tomography** *MEDICAL DOSIMETRY*
  Ajani, A. A., Qureshi, M. M., Kovalchuk, N., Orlina, L., Sakai, O., Minh Tam Truong
  2013; 38 (3): 238–42

- **Cone-beam computed tomography image guided therapy to evaluate lumpectomy cavity variation before and during breast radiotherapy** *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*
  Minh Tam Truong, Hirsch, A. E., Kovalchuk, N., Qureshi, M. M., Damato, A., Schuller, B., Vassilakis, N., Stone, M., Gierga, D., Willins, J., Kachnic, L. A.
  2013; 14 (2): 209–19

- **Radiosurgery and Radiotherapy for Benign and Malignant Anterior Skull Base Lesions** *Rhinology and Endoscopic Skull Base Surgery*
  Romesser, P., Kovalchuk, N., Nawaz, A., Truong, M.
  Springer.2013

- **Rectal and Anal Cancer** *Decision Tools for Radiation Oncology*
  Chin, J., Kovalchuk, N., Kachnic, L.
  Springer.2013

- **PET/CT of Cancer Patients: Part 2, Deformable Registration Imaging Before and After Chemotherapy for Radiation Treatment Planning in Head and Neck Cancer** *AMERICAN JOURNAL OF ROENTGENOLOGY*
  Schoenfeld, J. D., Kovalchuk, N., Subramaniam, R. M., Minh Tam Truong
  2012; 199 (5): 968–74

- **Deformable Registration of Preoperative PET/CT with Postoperative Radiation Therapy Planning CT in Head and Neck Cancer** *RADIOGRAPHICS*
  Kovalchuk, N., Jalisi, S., Subramaniam, R. M., Truong, M. T.
  2012; 32 (5): 1329–41

- **Radiation dose to the brachial plexus in head-and-neck intensity-modulated radiation therapy and its relationship to tumor and nodal stage.** *International journal of radiation oncology, biology, physics*
  Truong, M. T., Romesser, P. B., Qureshi, M. M., Kovalchuk, N., Orlina, L., Willins, J.
  2012; 84 (1): 158–64

- **Statistical Learning Theory Paradigms Adapted to Breast Cancer Diagnosis / Classification Using Image and Non-Image Clinical Data.** *Int J Funct Inform Personal Med*
  Land, W., Heine, J., Mizaku, A., Raway, T., Kovalchuk, N., Yang, J.
  2008

- **Three-dimensional Representation of Breast Cancer Using X-ray Imaging** *Emerging Technologies in Breast Imaging and Mammography*
  Kallergi, M., Manohar, A., Kovalchuk, N.
  American Scientific Publishers.2006