





## Stavros Melemenidis

Director of Pre-clinical Radiotherapy, Radiation Oncology - Radiation Therapy

 NIH Biosketch available Online

 Curriculum Vitae available Online

 Resume available Online

### SUPERVISORS

- Billy Loo

### Bio

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#### BIO

As a research scientist at the Radiation Therapy Division at the Department of Radiation Oncology, I am focusing on the investigation of the biological effect of ultra-high dose-rate (FLASH) radiation, and the development of the first FLASH radiotherapy cabinet for small animal irradiation. I am also a collaborative member in the clinical vision of PHASER, a new technology for clinical FLASH irradiation of patients. As a post-doctorate fellow at the Department of Radiation Oncology, Stanford University, the previous years I have dedicated my work on the development of primary cancer and metastatic tumor-mouse models, for the purpose of investigating immune cell migration, early detection of disease, and clinically relevant therapy combining radiation with novel drugs. My training as a doctorate candidate and during my brief post-doctorate appointment in the Department of Radiation Oncology, Oxford University UK has equipped me with a deep understanding of the molecularly targeted in vivo imaging with the use of contrast agents for early detection of metastasis. As a physics undergraduate and graduate student at the Department of Physics, Liverpool University UK, I have developed deep knowledge in all types of radiation and their implication in the entire spectrum of imaging modalities and medical radiation treatment.

#### CURRENT ROLE AT STANFORD

I am currently responsible for the design and delivery of the pre-clinical in-vivo irradiations with ultra-high dose-rate (FLASH), using a clinical Linac at the Cancer Center. I deliver irradiation for collaborators but also managing animal experiments for our group; from the development of tumors models and handling of the animals to the design of 3D printed shields for radiation and radiotherapy dosimetry.

#### HONORS AND AWARDS

- Invited presentation, Oxford Cancer Imaging Center Retreat (2013, 2014)
- Invited presentation, Oxford Institute Metastasis Symposium (2014)
- Poster Prize, Aegean Conferences - 3rd International Conference for Tumour Microenvironment and Cellular Stress (2014)
- Recognition of excellent research, Aegean Conferences - 12th International Conference on Complement Therapeutics (2019)

#### EDUCATION AND CERTIFICATIONS

- DPhil, University of Oxford , Radiation Biology (2014)
- MSc, University of Oxford , Radiation Biology (2010)
- MSc, University of Liverpool , Radiometrics: Instrumentation and Modelling (2009)
- BSc, University of Liverpool , Physics with Medical Applications (2008)

- Associate in Engineering, IIEK Neapoleos, Greece (2000)

## PATENTS

- Stavros Melemenidis. "United States Patent DOCKET S19-514B/PROV A WATER-MEDIATED DEVICE AND METHOD", Leland Stanford Junior University

## Publications

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### PUBLICATIONS

- **Improving radiotherapy in immunosuppressive microenvironments by targeting complement receptor C5aR1.** *The Journal of clinical investigation*  
Beach, C., MacLean, D., Majorova, D., Melemenidis, S., Nambiar, D. K., Kim, R. K., Valbuena, G. N., Guglietta, S., Krieg, C., Darvish-Damavandi, M., Suwa, T., Easton, A., Hillson, et al  
2023
- **FLASH-RT does not affect chromosome translocations and junction structures beyond that of CONV-RT dose-rates.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Barghouth, P. G., Melemenidis, S., Montay-Gruel, P., Ollivier, J., Viswanathan, V., Jorge, P. G., Soto, L. A., Lau, B. C., Sadeghi, C., Edlabadkar, A., Zhang, R., Ru, N., Baulch, et al  
2023: 109906
- **Clinical LINAC-based electron FLASH: Pathway for practical translation to FLASH clinical trials: LINAC electron FLASH.** *International journal of radiation oncology, biology, physics*  
No, H. J., Wu, Y. F., Dworkin, M. L., Manjappa, R., Skinner, L., Ashraf, M. R., Lau, B., Melemenidis, S., Viswanathan, V., Yu, A. S., Surucu, M., Schüler, E., Graves, et al  
2023
- **Human enteroids as a tool to study conventional and ultra-high dose rate radiation.** *Integrative biology : quantitative biosciences from nano to macro*  
Klett, K. C., Martin-Villa, B. C., Villarreal, V. S., Melemenidis, S., Viswanathan, V., Manjappa, R., Ashraf, M. R., Soto, L., Lau, B., Dutt, S., Rankin, E. B., Loo, B. W., Heilshorn, et al  
2023; 15
- **FLASH-RT does not affect chromosome translocations and junction structures beyond that of CONV-RT dose-rates.** *bioRxiv : the preprint server for biology*  
Barghouth, P. G., Melemenidis, S., Montay-Gruel, P., Ollivier, J., Viswanathan, V., Jorge, P. G., Soto, L. A., Lau, B. C., Sadeghi, C., Edlabadkar, A., Manjappa, R., Wang, J., Bouteiller, et al  
2023
- **Design and validation of a dosimetric comparison scheme tailored for ultra-high dose-rate electron beams to support multicenter FLASH preclinical studies.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Gonçalves Jorge, P., Melemenidis, S., Grilj, V., Buchillier, T., Manjappa, R., Viswanathan, V., Gondré, M., Vozenin, M. C., Germond, J. F., Bochud, F., Moeckli, R., Limoli, C., Skinner, et al  
2022
- **Real-time optical oximetry during FLASH radiotherapy using a phosphorescent nanoprobe.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Ha, B., Liang, K., Liu, C., Melemenidis, S., Manjappa, R., Viswanathan, V., Das, N., Ashraf, R., Lau, B., Soto, L., Graves, E. E., Rao, J., Loo, et al  
2022
- **Endogenous Retroviral Elements Generate Pathologic Neutrophils in Pulmonary Arterial Hypertension.** *American journal of respiratory and critical care medicine*  
Taylor, S., Isobe, S., Cao, A., Contrepois, K., Benayoun, B. A., Jiang, L., Wang, L., Melemenidis, S., Ozen, M. O., Otsuki, S., Shinohara, T., Sweatt, A. J., Kaplan, et al  
2022
- **Abdominopelvic FLASH Irradiation Improves PD-1 Immune Checkpoint Inhibition in Preclinical Models of Ovarian Cancer.** *Molecular cancer therapeutics*  
Eggold, J. T., Chow, S., Melemenidis, S., Wang, J., Natarajan, S., Loo, P. E., Manjappa, R., Viswanathan, V., Kidd, E. A., Engleman, E., Dorigo, O., Loo, B. W., Rankin, et al  
2021
- **Multicellular spheroids as in vitro models of oxygen depletion during FLASH irradiation.** *International journal of radiation oncology, biology, physics*

Khan, S., Bassenne, M., Wang, J., Manjappa, R., Melemenidis, S., Breikreutz, D. Y., Maxim, P. G., Xing, L., Loo, B. W., Pratz, G.  
2021

● **Reprogramming of serine metabolism during breast cancer progression**

Li, A., Ducker, G. S., Li, Y., Seoane, J. A., Xiao, Y., Melemenidis, S., Zhou, Y., Liu, L., Vanharanta, S., Graves, E. E., Rankin, E. B., Curtis, C., Massague, et al  
AMER ASSOC CANCER RESEARCH.2020

● **Increased local tumor control through nanoparticle-mediated, radiation-triggered release of nitrite, an important precursor for reactive nitrogen species.** *Physics in medicine and biology*

Kim, A. S., Melemenidis, S., Gustavsson, A. K., Abid, D., Wu, Y., Liu, F., Hristov, D., Schuler, E.  
2020

● **Abdominal FLASH irradiation reduces radiation-induced gastrointestinal toxicity for the treatment of ovarian cancer in mice.** *Scientific reports*

Levy, K. n., Natarajan, S. n., Wang, J. n., Chow, S. n., Eggold, J. T., Loo, P. E., Manjappa, R. n., Melemenidis, S. n., Lartey, F. M., Schüler, E. n., Skinner, L. n., Rafat, M. n., Ko, et al  
2020; 10 (1): 21600

● **FLASH Irradiation Results in Reduced Severe Skin Toxicity Compared to Conventional-Dose-Rate Irradiation.** *Radiation research*

Soto, L. A., Casey, K. M., Wang, J. n., Blaney, A. n., Manjappa, R. n., Breikreutz, D. n., Skinner, L. n., Dutt, S. n., Ko, R. B., Bush, K. n., Yu, A. S., Melemenidis, S. n., Strober, et al  
2020

● **Evaluating the Reproducibility of Mouse Anatomy under Rotation in a Custom Immobilization Device for Conformal FLASH Radiotherapy.** *Radiation research*

Ko, R. B., Soto, L. A., von Eyben, R. n., Melemenidis, S. n., Rankin, E. B., Maxim, P. G., Graves, E. E., Loo, B. W.  
2020

● **Metabolic Profiling Reveals a Dependency of Human Metastatic Breast Cancer on Mitochondrial Serine and One-Carbon Unit Metabolism.** *Molecular cancer research : MCR*

Li, A. M., Ducker, G. S., Li, Y. n., Seoane, J. A., Xiao, Y. n., Melemenidis, S. n., Zhou, Y. n., Liu, L. n., Vanharanta, S. n., Graves, E. E., Rankin, E. B., Curtis, C. n., Massague, et al  
2020

● **Theranostic nanoparticles enhance the response of glioblastomas to radiation** *Nanotheranostics*

Wu, W., Klockow, J. L., Mohanty, S., Ku, K. S., Daldrup-Link, H. E.  
2019; 3(4) (299-310)

● **The tumour microenvironment links complement system dysregulation and hypoxic signalling.** *The British journal of radiology*

Olcina, M. M., Kim, R. K., Melemenidis, S., Graves, E. E., Giaccia, A. J.  
2018: 20180069

● **Macrophages Promote Circulating Tumor Cell-Mediated Local Recurrence Following Radiation Therapy in Immunosuppressed Patients.** *Cancer research*

Rafat, M. n., Aguilera, T. A., Vilalta, M. n., Bronsart, L. L., Soto, L. A., von Eyben, R. n., Golla, M. A., Ahrari, Y. n., Melemenidis, S. n., Afghahi, A. n., Jenkins, M. J., Kurian, A. W., Horst, et al  
2018

● **Molecular magnetic resonance imaging of angiogenesis in vivo using polyvalent cyclic RGD-iron oxide microparticle conjugates.** *Theranostics*

Melemenidis, S., Jefferson, A., Ruparelina, N., Akhtar, A. M., Xie, J., Allen, D., Hamilton, A., Larkin, J. R., Perez-Balderas, F., Smart, S. C., Muschel, R. J., Chen, X., Sibson, et al  
2015; 5 (5): 515-29