

AIKATERINI NIKIFORAKI

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PERSONAL INFORMATION

Date of Birth: 18/01/1980

Nationality: Greek

LICENSED MEDICAL PHYSICIST (GREECE)

- Ionizing radiation
- Non-ionizing radiation

WORKING EXPERIENCE

◆ 2014 – TODAY

Research team member at Computerized Bio-Medicine Laboratory, Institute of Research and Technology (**FORTH**), Heraklion, Crete. Director: Dr. K. Marias. Main Interest: Imaging Software applications for multi-parametric MRI acquisitions, MRI protocol optimization, MRI pre-processing, MRI Quality Assurance.

2012 – 2015

MRI Medical Physicist for **N. Papanikolaou & Associates**. **Responsibilities:** On Site MRI training, Protocol Optimization and Image Post Processing responsible for a network of 120 clinical sites worldwide.

◆ 2007 – 2012

Medical Physicist at MRI Dpt of **Interbalkan Medical Center**. Director of the Department: Prof. A. Drevelegas. Main responsibility: MRI protocol optimization, Image Quality for 3T, 1.5 T and 0.2 T systems.

♦ 2006 – 2007

Teaching physics, private sector **Symvoli**, Pireus Greece.

EDUCATION AND TRAINING

♦ 2020

UNIVERSITY OF CRETE, GR, MEDICAL SCHOOL, PhD

PhD THESIS: “*Multiparametric semi-quantitative and quantitative study of soft tissue tumors with advanced Magnetic Resonance methods*”, under the supervision of A. Karantanas.

♦ 2004 – 2005

UNIVERSITY OF ABERDEEN, UK, MASTER’S DEGREE, MEDICAL PHYSICS

MSc THESIS: “*Monte Carlo Simulation of a PET imager using MultilayerDetector*”, under the supervision of Steven Mc Callum.

♦ 2008 – 2009

Hands-on training on the duties of a **Medical Physicist**:

Nuclear Medicine Department, Radiology Department, Radiation Therapy Department (conventional radiation therapy, 3-d conformal radiation therapy, brachytherapy), Theageneion Anticancer Hospital, Thessaloniki, Greece

♦ 2008-2003

UNIVERSITY OF CRETE, BACHELOR’S DEGREE, PHYSICS

♦ 2003

UNIVERSITY OF CRETE (Greece), 15th ADVANCED PHYSICS SUMMER SCHOOL

PERSONAL SKILLS AND COMPETENCES

♦ FOREIGN LANGUAGES

ENGLISH PROFICIENCY, UNIVERSITY OF CAMBRIDGE 1996, TOEFL 2004

FRENCH DELF 1995, ERASMUS AT ECOLE SUPERIEURE DE PHYSIQUE DE MARSEILLE 2003 - 2004

RUSSIAN UNDERGRADUATE LESSONS AT UNIVERSITY OF CRETE, 1998-2002

♦ EUROPEAN COMPUTER DRIVING LICENCE

PUBLICATIONS

♦ INTERNATIONAL JOURNAL PAPERS (Journal papers - J)

[J1] K Nikiforaki, K Marias. MRI Methods to Visualize and Quantify Adipose Tissue in Health and Disease, Biomedicines 11 (12), 3179, 2023. <https://doi.org/10.3390/biomedicines11123179>

[J2] V Kalokyri, H Kondylakis, S Sfakianakis, K Nikiforaki, I Karatzanis, S Mazzetti, N Tachos, D Regge, D I Fotiadis, K Marias, M Tsiknakis. MI-Common Data Model: Extending Observational Medical Outcomes Partnership-Common Data Model (OMOP-CDM) for Registering Medical Imaging Metadata and Subsequent Curation Processes, JCO Clinical Cancer Informatics 2023 :7. <https://doi.org/10.1200/CCI.23.00101>

[J3] A Dovrou, K Nikiforaki, D Zaridis, GC Manikis, E Mylona, N Tachos, et al, A segmentation-based method improving the performance of N4 bias field correction on T2weighted MR imaging data of the prostate, Magnetic Resonance Imaging 101, 1-12, 2, 2023. <https://doi.org/10.1016/j.mri.2023.03.012>

[J4] ME Klontzas, GC Manikis, K Nikiforaki, EE Vassalou, K Spanakis, I Stathis, et al., Radiomics and machine learning can differentiate transient osteoporosis from avascular necrosis of the hip, Diagnostics 11 (9), 1686, 15, 2021. <https://doi.org/10.3390/diagnostics11091686>

[J5] GC Manikis, GS Ioannidis, L Siakallis, K Nikiforaki, M Iv, D Vozlic, Multicenter DSC-MRI - based radiomics predict IDH mutation in gliomas, Cancers 13 (16), 3965, 28, 2021. <https://doi.org/10.3390/cancers13163965>

[J6] T Boursianis, G Kalaitzakis, K Nikiforaki, E Kosteletou, D Antypa, ,The Significance of Echo Time in fMRI BOLD Contrast: A Clinical Study during Motor and Visual Activation Tasks at 1.5 T, Tomography 7 (3), 333-343, 2021. <https://doi.org/10.3390/tomography7030030>

[J7] GS Ioannidis, S Christensen, **K Nikiforaki**, E Trivizakis, K Perisinakis, A Hatzidakis, A Karantanas, M Reyes, M Lansberg, K Marias, K. Cerebral CT Perfusion in Acute Stroke: The Effect of Lowering the Tube Load and Sampling Rate on the Reproducibility of Parametric Maps. *Diagnostics* 2021, 11, 1121. <https://doi.org/10.3390/diagnostics11061121>

[J8] GC Manikis, **K Nikiforaki**, E Lagoudaki, E de Bree, TG Maris, K Marias, A Karantanas, Differentiating low from high-grade soft tissue sarcomas using post-processed imaging parameters derived from multiple DWI models, *European Journal of Radiology* 138, 109660K, 2021. <https://doi.org/10.1016/j.ejrad.2021.109660>

[J9] **K Nikiforaki**, GS Ioannidis, E Lagoudaki, GH Manikis, E de Bree, A Karantanas, TG Maris, K Marias, Multiexponential T2 relaxometry study on benign and malignant adipocytic tumours, *European Radiology Experimental*, 4, 1, 45, 2020. <https://doi.org/10.1186/s41747-020-00175-0>

[J10] GS Ioannidis, **K Nikiforaki**, G Kalaitzakis, A Karantanas, K Marias, TG Maris, “Inverse Laplace transform and multiexponential fitting analysis of T2 relaxometry data: a phantom study with aqueous and fat containing samples,” *European Radiology Experimental*, 2020. <https://doi.org/10.1186/s41747-020-00154-5>.

[J11] GC Manikis, **K Nikiforaki**, E Lagoudaki, E de Bree, TG Maris, K Marias, and AH Karantanas, T2-based MRI radiomic features for discriminating tumour grading in soft tissues sarcomas, *Hellenic Journal of Radiology*, Vol 4, No 3, 2019.

[J12] GS Ioannidis, **K Nikiforaki**, A Karantanas, Statistical and spatial correlation between diffusion and perfusion MR imaging parameters: A study on soft tissue sarcomas, *Physica Medica*, 65, 59-66, 1120-1797, 2019. <https://doi.org/10.1016/j.ejmp.2019.08.007>.

[J13] **K Nikiforaki**, GC Manikis, E Kontopodis E, Lagoudaki, E de Bree, K Marias, AH Karantanas, TG Maris T2, T2* and spin coupling ratio as biomarkers for the study of lipomatous tumors. *Phys Medica* 60:76–82, 2019. <https://doi.org/10.1016/j.ejmp.2019.03.023>

[J14] GS Ioannidis, TG Maris, **K Nikiforaki**, A Karantanas, K Marias, Investigating the Correlation of Ktrans with Semi-Quantitative MRI Parameters Towards More Robust and Reproducible Perfusion Imaging Biomarkers in Three Cancer Types. *IEEE J Biomed Heal Informatics* 23:1855–1862, 2019. <https://doi.org/10.1109/JBHI.2018.2888979>

[J15] E Kondopodis, M Venianaki, GH Manikis, **K Nikiforaki**, O Salvetti, E Papadaki, GZ Papadakis, A Karantanas, K Marias K., Investigating the role of model-based and model-free imaging biomarkers as early predictors of neoadjuvant breast cancer therapy outcome. *IEEE Journal of Biomedical and Health Informatics*, Special Issue on Biomedical Informatics across the Cancer Continuum, Jun 2018. <https://doi.org/10.1109/JBHI.2019.2895459>

[J16] E Trivizakis, GC Manikis, **K Nikiforaki**, K Drevelegas, M Constantinides, A Drevelegas, K Marias, Extending 2-D Convolutional Neural Networks to 3-D for Advancing Deep Learning Cancer Classification with Application to MRI Liver Tumor Differentiation. *IEEE J Biomed Heal Informatics* 23:923–930. <https://doi.org/10.1109/JBHI.2018.2886276>

[J17] GC Manikis, K Marias, DMJ Lambregts, **K Nikiforaki**, MM van Heeswijk, Diffusion weighted imaging in patients with rectal cancer: Comparison between Gaussian and non-Gaussian models. PLOS ONE 13(4): e0196262, 2017 <https://doi.org/10.1371/journal.pone.0184197>

[J18] KV Katsaros, **K Nikiforaki**, G Manikis, K Marias, E Liouta, C Boskos, G Kyriakopoulos, G Stranjalis, N Papanikolaou, Whole tumor MR Perfusion histogram analysis in assessment of patients with gliomas: Differentiation between high- and low-grade tumors. Hellenic Journal of Radiology. Vol 2, No 1, 2017.

[J19] **K Nikiforaki**, GC Manikis, T Boursianis, K Marias, A Karantanas, TG Maris, The impact of spin coupling signal loss on fat content characterization in multi-echo acquisitions with different echo spacing. Magn Reson Imaging 38:6–12, 2017. <https://doi.org/10.1016/j.MRI.2016.12.011>

[J20] K Drevelegas, **K Nikiforaki**, M Constantinides, N Papanikolaou, L Papalavrentios, I Stoikou, P Zarogoulidis, G Pitsiou, A Pataka, J Organtzis, E Papadaki, K Porpodis, I Kougioumtz, I Kioumis, C Kouskouras, E Akriviadis, A Drevelegas A, Apparent Diffusion Coefficient Quantification in Determining the Histological Diagnosis of Malignant Liver Lesions. J Cancer. 2016 Mar 29;7(6):730-5. <https://doi.org/10.7150%2Fjca.14197>

[J21] DM Lambregts, MH Martens, RC Quah, **K Nikiforaki**, LA Heijnen, CH Dejong, K Marias, N Papanikolaou, RG Beets-Tan, Whole-liver diffusion-weighted MRI histogram analysis: effect of the presence of colorectal hepatic metastases on the remaining liver parenchyma. Eur J Gastroenterol Hepatol. 2015 Apr;27(4):399-404., 2015. <https://doi.org/10.1097/meg.0000000000000316>

[J22] Potsi S, Chourmouzi D, Moumtzouoglou A, Nikiforaki A, Gkouvas K, Drevelegas A. Transient contrast encephalopathy after carotid angiography mimicking diffuse subarachnoid haemorrhage. Neurol Sci. 2012 Apr;33(2):445-8. doi: 10.1007/s10072011-0765-3, 2011. <https://doi.org/10.1007/s10072-011-0765-3>

♦ BOOK CHAPTERS (BOOK CHAPTERS - BC)

[BC1] Stamoulou, E., Spanakis, C., Nikiforaki, K., Karantanas, A. H., Tsiknakis, N., Matikas, A., & Manikis, G. C.. Using Commercial and Open-Source Tools for Artificial Intelligence: A Case Demonstration on a Complete Radiomics Pipeline. In Introduction to Artificial Intelligence (pp. 13-37). Cham: Springer International Publishing. (2023) https://doi.10.1007/978-3-031-25928-9_2

[BC2] Manikis GC, Kontopodis E, Nikiforaki K, Marias K, Papanikolaou N. 2016. Imaging Biomarkers Model-Based Analysis. Imaging Biomarkers: Development and Clinical Integration, Springer International Publishing, pp.71-86. https://doi.org/10.1007/978-3-319-43504-6_7

♦ **PAPERS IN PROCEEDINGS (PAPERS IN PROCEEDINGS - PP)**

[PP1] E Trivizakis, V Koutoulidis, L Mouloupoulos, E Terpos, I Ntanasis-Stathopoulos, P Malandrakis, P Grigoropoulos, P Papadopoulos, K Nikiforaki, N Papanikolaou, DI Fotiadis, K. Marias, Ensemble of Heterogeneous Machine Learning Models with Multiple Inputs for Multi-Omics Analysis, IEEE EMBS International Conference on Data Science and Engineering in Healthcare, Medicine & Biology, Malta,2023.

[PP2] M Koutoulakis, E Trivizakis, V Koutoulidis, L Mouloupoulos, E Terpos, I Ntanasis-Stathopoulos, P Malandrakis, P Grigoropoulos, P Papadopoulos, K Nikiforaki, K Marias, N Papanikolaou, Nikolaos, Fully automated detection and segmentation pipeline for the bone marrow of the lytic bone of multiple myeloma patients, IEEE EMBS International Conference on Data Science and Engineering in Healthcare, Medicine & Biology, Malta,2023.

[PP3] V Kalokyri, N Tachos, S Sfakianakis, K Nikiforaki, I Karatzanis, H Kondylakis, S Mazzetti, D Regge, N Papanikolaou, K Marias, DI Fotiadis, M Tsiknakis, Data preparation for artificial intelligence in medical imaging: Experiences from the ProCancer-I initiative, IEEE EMBS International Conference on Data Science and Engineering in Healthcare, Medicine & Biology

[PP4] Ioannidis GS, Nikiforaki K, Kalaitzakis G, Boursianis T, Antonopoulos G, et al, T2* relaxometry tool for calibration and quantification of iron concentration based on multi echo MRI data, In Proceedings of the 2022 IEEE International Conference on Imaging Systems and Techniques (IST), Kaohsiung, Taiwan, pp. 1–6, 21–23 June 2022 <https://doi.org/10.1109/IST55454.2022.9827767>

[PP5] GS Ioannidis, **K Nikiforaki**, A Karantanas, Correlation of DWI and DCE MRI Markers for the Study of Perfusion of the Lower Limb in Patients with Peripheral Arterial Disease, IEEE 19th International Conference on Bioinformatics and Bioengineering (BIBE), Athens, Greece, pp. 433-438, 2019. <https://doi.org/10.1109/BIBE.2019.000842018>.

[PP6] E Trivizakis, GH Manikis, **K Nikiforaki**, K Drevelegas, M Constantinides, A Drevelegas, K Marias, Extending 2-D Convolutional Neural Networks to 3-D for Advancing Deep Learning Cancer Classification With Application to MRI Liver Tumor Differentiation. IEEE Journal of Biomedical and Health Informatics. PP. 1-1. 10.1109/JBHI.2018.2886276,2018. <http://dx.doi.org/10.1109/JBHI.2018.2886276>

[PP7] R LaLonde, I Tanner, **K Nikiforaki**, GZ Papadakis, P Kandel, CW Bolan, MB Wallace, U Bagzci, INN: Inflated Neural Networks for IPMN Diagnosis. Medical Image Computing and Computer Assisted Intervention – MICCAI. Lecture Notes in Computer Science, vol 11768, Springer, 2018. https://doi.org/10.1007/978-3-030-32254-0_12

[PP8] Kontopodis E, Manikis GC, Nikiforaki K, Venianaki M, Marias M, Maris TG, Karantanas A, Papadaki E. Incremental diagnostic information obtained via novel Dynamic Contrast Enhanced MRI framework applied on Multiple Sclerosis patients: A preliminary study. IEEE EMBS International Conference on Biomedical Health Informatics (BHI), pp. 46-49, 2018. <https://doi.org/10.1109/BHI.2018.8333366>

[PP9] Manikis GC, Nikiforaki K, Ioannidis G, Papanikolaou N, Marias K. Addressing Intravoxel Incoherent Motion challenges through an optimized fitting framework for quantification of perfusion. IEEE International

Conference on Imaging Systems and Techniques (IST), Chania, Greece. pp. 487-492, 2016.
<https://doi.org/10.1109/IST.2016.7738275>

[PP10] Manikis GC, Nikiforaki K, Papanikolaou N, Marias K. 2016. Diffusion Modelling Tool (DMT) for the analysis of Diffusion Weighted Imaging (DWI) Magnetic Resonance Imaging (MRI) data. Computer Graphics International (CGI), the 33th Annual Conference, pp. 97-100. <https://doi.org/10.1145/2949035.2949060>

[PP11] Marias K, Nikiforaki K, Manikis GC, Kontopodis E, Papanikolaou N. 2016. Visualizing tumor environment with perfusion and diffusion MRI: Computational challenges. Computer Graphics International (CGI), the 33th Annual Conference, pp. 113-116. <https://doi.org/10.1145/2949035.2949064>

♦ **PAPERS IN PROCEEDINGS (ABSTRACTS IN PROCEEDINGS - AP)**

[AP1] N V Gkasios, V Giannakaki, T Boursianis, G Kalaitzakis, K Nikiforaki et al, Electrical conductivity measurements utilizing fast T2 relaxometry techniques inside a clinical MRI system for three hydatid solution samples: an in-vitro study, Physica Medica: European Journal of Medical Physics 104, S47, 2022.
[https://doi.org/10.1016/S1120-1797\(22\)03149-0](https://doi.org/10.1016/S1120-1797(22)03149-0)

[AP2] N V Gkasios, V Giannakaki, T Boursianis, G Kalaitzakis, K Nikiforaki et al, MR thermometry utilizing fast t2 relaxometry techniques inside a clinical MRI system in mild hyperthermia temperature ranges for three hydatid solution samples: an in-vitro study, Physica Medica: European Journal of Medical Physics 104, S17-S18, 2022
[https://doi.org/10.1016/S1120-1797\(22\)03164-7](https://doi.org/10.1016/S1120-1797(22)03164-7)

[AP3] G Kalaitzakis, S Karkavitsas, V Gkasios, V Giannakaki, T Boursianis, et al, Introduction of a software tool for MR thermometry utilizing fast T2 relaxometry techniques in mild hyperthermia temperature ranges for three hydatid solution samples, Physica Medica: European Journal of Medical Physics 104, S52, 2022
[https://doi.org/10.1016/S1120-1797\(22\)03164-7](https://doi.org/10.1016/S1120-1797(22)03164-7).

[AP4] Nikiforaki, K, Kalaitzakis G, Ioannidis G, Maris TG, Marias K, Karantanas A. Visualizing sites of increased cellularity and high permeability in soft tissue sarcomas Physica Medica: European Journal of Medical Physics, Vol. 52, p19

[AP5] Nikiforaki K, Lagoudaki E, Manikis GC, Kontopodis E, Marias K, Bree E, Karantanas A, Maris TG. 2018, Spin coupling signal loss correlates with differentiation grade of lipomatous tumors: Preliminary results. Physica Medica: European Journal of Medical Physics, Volume 52, Supplement 1, Page 9,
<https://doi.org/10.1016/j.ejmp.2018.06.093>

[AP6] Nikiforaki K, Manikis GC, Lagoudaki E, Veniadaki M, Marias K, Bree E, Maris TG,

Karantanas A. 2018. T2 and T2* relaxometry of benign and malignant lipomatous tumors. *Physica Medica: European Journal of Medical Physics*, Volume 52, Supplement 1, Pages 9–10, <https://doi.org/10.1016/j.ejmp.2018.06.094>

[AP7] Manikis GC, Nikiforaki K, Papanikolaou N, Albiin N, Kartalis N, Marias K. 2016. Diffusion weighted imaging of pancreatic adenocarcinoma: which model is the most appropriate?. ECR 2016–26th European Congress of Radiology, March 2-6, 2016, Vienna, Austria.

[AP8] Nikiforaki K, Boursianis T, Manikis GC, Marias K, Karantanas A, Maris TG. 2016. Feasibility of fat fraction quantification by measuring J-coupling related signal modulation in Multi Echo Fast Spin Echo Sequences. Supplement to the *Physica Medica: European Journal of Medical Physics*, Volume 32, Supplement 3, Page 249 <https://doi.org/10.1016/j.ejmp.2016.07.529>

[AP9] I Tsiapa, T Boursianis, G Kalaitzakis, **K Nikiforaki**, E Papadaki, G Bontzos, AH Karantanas, M K Tsimbaris, Preliminary study for non-invasive magnetic resonance imaging and spectroscopy of the eye: A novel technique for monitoring pharmacokinetics of ocular drug delivery and others *Physica Medica: European Journal of Medical Physics*, Vol. 32, p249

[AP10] T Boursianis, G Kalaitzakis, **K Nikiforaki**, I Tsiapa, E Papadaki, A Karantanas, TG Maris SNR dependence on hardware installation and patient immobilization in fMRI examinations. MR imaging protocol optimization *Physica Medica: European Journal of Medical Physics*, Vol. 32, p315 Published in issue: September 2016

[AP11] Nikiforaki K, Katsaros VK, Manikis G, Marias K, Strantzalis G, Papanikolaou N. Glioma grading based on perfusion MRI: a normalized blood volume histogram metrics quantification study, ECR 2014–24th European Congress of Radiology, March 6-10, 2014, Vienna, Austria

[AP12] Katsaros V, Nikiforaki K, Manikis G, Marias K, Stranjalis G, Papanikolaou N. 2014. Glioma Grading based on Histogram Analysis: Comparison between Apparent Diffusion Coefficient and normalized Blood Volume metrics. The International Society for Magnetic Resonance in Medicine, Joint Annual Meeting. ISMRM-ESMRMB, Milano, Italy, 2014, 10-16 May.

[AP13] Manikis GC, Nikiforaki K, Ioannidis G, Papanikolaou N, Marias K. 2017. Addressing challenges in fitting bi-exponential DW-MRI data. ECR 2017–27th European Congress of Radiology, March 1-5, 2017, Vienna, Austria, 10.1594/ecr2017/C-2964

♦ **POSTER PRESENTATIONS (Posters - P)**

[P1] Manikis GC, Nikiforaki K, Papanikolaou N, Matos C, Marias K. 2017. A versatile platform for the longitudinal analysis of the DW-MRI data. ECR 2017–27th European Congress of Radiology, March 1-5, 2017, Vienna, Austria, 10.1594/ecr2017/C-2835

[P2] Drevelegas K, Nikiforaki K, Manikis GC, Marias K, Constantinides M, Stoikou I, Papalavrentios L, Bangeas P, Drevelegas A. 2017. Classification of focal liver lesions based on histogram analysis of 3D pixel based ADC

parametric maps. ECR 2017–27th European Congress of Radiology, March 1-5, 2017, Vienna, Austria, 10.1594/ecr2017/C-2993

[P3] Manikis GC, Marias K, Nikiforaki K, Kartalis N, Albiin N, Papanikolaou N. 2016. Comparison between Gaussian and non-Gaussian diffusion models in hepatic metastatic disease and normal liver. ECR 2016–26th European Congress of Radiology, March 2-6, 2016, Vienna, Austria. DOI: 10.1594/ecr2016/C-2359

[P4] Manikis GC, Marias K, Nikiforaki K, Lambregts DMJ, Heeswijk MV, Beets-Tan RGH, Papanikolaou N. 2016. Diffusion imaging of rectal cancer: comparison between four different models. ECR 2016–26th European Congress of Radiology, March 2-6, 2016, Vienna, Austria. DOI: 10.1594/ecr2016/C-2178

♦ **Funded European Projects**

The following table presents the European and National funded projects where Katerina Nikiforaki has an active role as a medical physicist in one or more Work Packages:

Project Name	Acronym	Starting	Ending	Budget
Computational Horizons in Cancer: Developing Meta- and Hyper-Multiscale Models and Repositories for In Silico Oncology	CHIC	1/4/2013	31/3/2017	888.106 €
Development of Interdisciplinary Research Activities for Systems Biology	KRIPIS-BIOSYS	1/7/2013	30/7/2015	70.000 €
Development of automated iron load quantification for diagnostic purposes	APOSIDI (ΕΣΠΑ2014-2020)	16/6/2020	15/12/2022	264.340
Genomics and Personalized Medicine for all through Artificial Intelligence in Haematological Diseases, GA101017549	GENOMED4ALL (H2020)	01/01/2021	31/12/2024	396.000

An AI Platform integrating imaging data and models, supporting precision care through prostate cancer's continuum, GA952159, H2020 - SC1-FA-DTS-2019-1 AI for Health Imaging.	ProCAncer-I (H2020)	01/10/2020	30/09/2024	1.372.000
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◆ **Personal Applications for Funding**

ATARI, Adipose Tissue mAgnetic Resonance Imaging. ERC Starting Grant Application, 2023