

# Advances in Total-Body PET/CT Research

Chushan Yan, Jiehua Xu\*

Zhuhai Clinical Medical College of Jinan University (Zhuhai People's Hospital, The Affiliated Hospital of Beijing Institute of Technology), Zhuhai, China

Email: yancs1107@163.com, \*xujhgz3@163.com

**How to cite this paper:** Yan, C.S. and Xu, J.H. (2026) Advances in Total-Body PET/CT Research. *Journal of Biosciences and Medicines*, 14, 274-282.  
<https://doi.org/10.4236/jbm.2026.141021>

**Received:** November 3, 2025

**Accepted:** January 16, 2026

**Published:** January 19, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

With the iterative advancement of PET/CT technology, uEXPLORER, the first ultra-long axial field-of-view (LAFOV) PET/CT system enabling single-bed-position whole-body imaging has entered clinical use. This scanner significantly enhances molecular imaging performance through ultra-fast scanning, low-dose imaging, whole-body dynamic imaging, and simultaneous multi-tracer imaging capabilities. Recently, we have witnessed rapid growth in related research, which primarily focused on single imaging protocol optimization and clinical application exploration. This article systematically reviews current studies on uEXPLORER, aiming to inform future research directions.

## Keywords

Whole Body Imaging, Positron-Emission Tomography, Tomography, X-Ray Computer

## 1. Introduction

PET/CT, having undergone several disruptive technological innovations, has become one of the most mature molecular imaging tools, playing a crucial role in the precise diagnosis and treatment of diseases such as cancer, neurological, and cardiovascular disorders. Recently, to overcome the physical limitations imposed by the axial field-of-view (AFOV, typically 15 - 30 cm) on the sensitivity of conventional PET/CT systems, long axial field-of-view (LAFOV) PET/CT systems with an AFOV of at least 100 cm have emerged, significantly improving system sensitivity and resolution [1]. While most current LAFOV PET/CT systems cover a single-bed scan range from the skull base to the mid-thigh, they do not achieve true head-to-toe whole-body imaging. The uEXPLORER system (marketed as Total-Body (TB) PET/CT) is currently the only model capable of true single-bed head-to-toe imaging, with an AFOV of 194 cm. Research on TB PET/CT has

demonstrated multiple technological breakthroughs: low-dose scanning, fast scanning, repeat (or delayed) imaging after a single tracer injection, simultaneous whole-body dynamic imaging, and multi-tracer imaging. Although clinical translation is still in its early stages, academic interest is growing significantly. Existing reviews primarily focus on single technical advantages or specific clinical research topics of TB PET/CT uEXPLORER. This review systematically integrates the various imaging technical advantages and related clinical application values of TB PET/CT.

## 2. Fast Scanning

TB PET/CT can accomplish image acquisition tasks rapidly while maintaining image quality and diagnostic efficacy, effectively reducing motion artifacts. Acquisition speed is related to the injected radiotracer dose. Studies have shown that with conventional administered doses, the acquisition time can be reduced from 300 s to 30 s [2] [3]; when using half the dose, it can be reduced to 60 s [4]. Artificial intelligence (AI) can further increase acquisition speed (approximately 50-fold shorter) [5]. Fast scanning reduces motion artifacts, which is particularly beneficial for pediatric and critically ill patients, helps eliminate physiological motion artifacts, promotes the application of cardiac or respiratory gating, and improves the detection rate of small lesions in the heart and adjacent diaphragm. For instance, a 20-second breath-hold acquisition protocol has been proven to significantly reduce respiratory motion-induced image blurring in lung cancer patients, improving lesion detection [6].

## 3. Low-Dose and Ultra-Long-Delayed Imaging

TB PET/CT possesses ultra-high sensitivity—approximately 40 times that of conventional short axial field-of-view (SAFOV) PET/CT—allowing for a significant reduction in the injected radiotracer dose, potentially as low as 1/30 of the conventional dose [7]. This substantially reduces internal radiation exposure for patients, making it more suitable for children and patients requiring multiple follow-up examinations. Furthermore, studies have confirmed that with AI processing, PET data acquired with just 2% of the conventional injection dose, without CT or MRI assistance, can generate PET images with anatomical detail, enabling accurate diagnosis of specific diseases [8]. The ultra-low-dose imaging capability of TB PET/CT expands its application potential, facilitating research in inflammatory diseases and even exploration in healthy populations. For example, it has been used for whole-body assessment in patients with autoimmune inflammatory arthritis [9], providing new avenues for studying disease mechanisms; and for non-invasively exploring the biological characteristics of vessel walls in healthy volunteers, laying the foundation for monitoring vascular pathologies [10].

The ultra-high sensitivity of TB PET/CT makes ultra-long-delayed imaging feasible, avoiding the need for a second injection in remedial imaging scenarios. With conventional injection doses, delayed imaging up to 10 hours (approximately five

physical half-lives of  $^{18}\text{F}$ ) is possible, with image noise comparable to that of conventional PET/CT imaging [11]. Research indicates that delayed imaging can improve the lesion signal-to-noise ratio [12], thereby enhancing lesion detection rates, which is particularly useful for tumor immune imaging. Monoclonal antibodies have prolonged target binding and non-specific clearance times *in vivo*, necessitating delayed imaging. However, delayed imaging with traditional SAFOV PET/CT increases noise and often requires long-half-life radionuclides (e.g.,  $^{89}\text{Zr}$ ), leading to high radiation doses for patients. Studies have shown that  $^{89}\text{Zr}$ -labeled antibody targeting MUC5AC using TB PET/CT holds promise in the diagnosis and treatment of pancreatic cancer [13]. TB PET/CT significantly improves image quality for long-half-life radiotracers, potentially promoting their routine clinical application in the future.

#### 4. Whole-Body Dynamic Imaging

The high temporal resolution of TB PET/CT makes whole-body dynamic imaging possible, clearly depicting the dynamic metabolic changes of tracers in the body and enabling *in vivo* assessment of pharmacokinetics. The ultra-high temporal resolution dynamic PET imaging method developed by Zhang *et al.* allows for tracer dynamic visualization on a 100-millisecond timescale and generates high-quality motion-frozen images, aiding tracer kinetic studies and cardiac motion research [14]. Dynamic imaging involves continuous scanning initiated immediately after tracer injection. Early studies often employed long acquisition times of 60 - 90 minutes, which posed challenges regarding patient comfort and increased risk of motion artifacts. Current research aims to enhance its applicability by shortening acquisition times, primarily through methods including: 1) Late scanning: Lacks early-phase imaging data, requiring alternative plasma input functions (IF), such as population-based IF [15] or deep learning approaches enabling direct parametric imaging without an IF [16]; 2) Early scanning [17]; 3) Dual-time-window imaging: Two short dynamic scans [18], e.g., at 0 - 4 min and 54 - 60 min post-injection [19]; 4) Dual-injection protocol: A second injection administered during a late short scan, e.g., a booster injection at 56 min during a single scan 50 - 60 min post-initial injection [19]. AI algorithms can effectively mitigate motion artifacts, thereby significantly improving image quality [20].

Whole-body dynamic imaging technology is widely applied in research on tumors, inflammation, and neurological diseases. In oncology, this technique has confirmed differences in metabolic kinetics between normal lung tissue and lung tumors [21], and shown similar metabolic characteristics between metastatic and primary lesions [22] [23], indicating its utility for differential diagnosis of lesion nature. This technique also enables real-time monitoring of tracer metabolism, facilitating the development of new imaging agents. For example, it first revealed specific uptake of  $^{11}\text{C}$ -methionine in multiple myeloma [24]; and confirmed the value of the targeted cell adhesion molecule Nectin-4 imaging agent  $^{68}\text{Ga}$ -N188 in evaluating treatment response in advanced urothelial carcinoma [25]. In neurol-

ogy, Xin *et al.* used whole-body dynamic imaging to explore the biodistribution of  $^{11}\text{C}$ -CFT in humans for the first time, reflecting the functional state of the dopaminergic system [26], providing important evidence for the diagnosis and differential diagnosis of Parkinson's disease and related disorders; and revealed a potential link between the nigrostriatal pathway and the digestive system [27], expanding understanding of disease mechanisms. Although this technique is still in its early research stages, it offers broad prospects for exploring interactions between organs and systems and comprehensively understanding human physiological connectivity.

## 5. Multi-Tracer Studies

Multi-tracer PET/CT imaging can simultaneously display multiple biomarkers and their metabolic processes in a disease, aiding in-depth revelation of disease essence. Traditional methods typically require separate examinations to avoid tracer interference, with the interval depending on the half-life of the previously used radionuclide. TB PET/CT, leveraging its ultra-high sensitivity, enables simultaneous dual-tracer imaging. For instance, Liu *et al.* [28] proposed a dual-low-activity FDG-FAPI dual-tracer imaging protocol: first performing low-dose CT for attenuation correction and static  $^{18}\text{F}$ -FDG scanning (1/10 conventional dose), followed by injection of low-dose  $^{68}\text{Ga}$ -DOTA-FAPI-04 (1/2 conventional dose) and dynamic scanning. This protocol comprehensively utilizes the advantages of both tracers while keeping the patient's radiation exposure level comparable to or less than that of a single standard whole-body  $^{18}\text{F}$ -FDG PET/CT scan. Furthermore, the combined application of  $^{68}\text{Ga}$ -DOTATATE PET/CT and  $^{18}\text{F}$ -FDG PET/CT can effectively diagnose and assess the heterogeneity of neuroendocrine neoplasms [29].

## 6. AI-Powered TB PET/CT Examination

AI technology not only optimizes the TB PET/CT workflow but also deeply explores its advanced functions, expanding innovative application scenarios, including but not limited to: low-dose scanning, fast scanning, direct parametric reconstruction without an input function, and motion artifact correction. Furthermore, AI demonstrates significant advantages in areas such as attenuation correction optimization, image reconstruction quality improvement, automatic lesion segmentation, and medical data anonymization. While TB PET/CT enables ultra-low-dose tracer imaging, reducing patient radiation dose from the tracer, CT radiation remains a concern. AI-based direct attenuation and scatter correction techniques have been successfully applied in multi-tracer TB PET/CT examinations [30] effectively reducing the overall patient radiation dose. In image reconstruction, deep learning methods (e.g., progressive learning algorithms) effectively suppress background noise and enhance image contrast [31]. AI-powered segmentation tools improve the efficiency and accuracy of diagnosing vast amounts of TB PET/CT data [32]. Notably, deep learning models trained on TB PET/CT

datasets hold significant value for enhancing the performance of SAFOV PET/CT systems [33]. Medical imaging data sharing is crucial for research, but the risk of privacy leakage requires vigilance. Studies show that even after anonymization, facial recognition technology combined with deep learning can potentially reconstruct patient facial features from PET data, rendering anonymization ineffective [34]. With the synergistic development of AI and TB PET/CT, the improved accuracy of whole-body image reconstruction poses new challenges for privacy protection during data sharing. Targeted 3D volume data blurring schemes have shown potential to reduce facial recognition risks [35]; future research should focus on this critical issue.

## 7. Challenges and Future Prospects

The primary challenges currently facing TB PET/CT systems include the high costs associated with equipment acquisition, installation, and maintenance, as well as the exponentially increasing volume of raw PET data. The latter places increasing demands on data storage capacity and computational processing capabilities, necessitating urgent upgrades in supporting information technology infrastructure. Promising directions for future research and applications primarily encompass the following aspects. 1) Diversification of Research Directions. This is primarily reflected in the development of novel radiopharmaceuticals, whole-body dynamic analysis, investigation of multi-system disease associations, and visualization of the immune microenvironment. As previously described, the potential interconnection between the nervous and digestive systems. This technology enables non-invasive study of whole-body drug pharmacokinetics, potentially shortening drug development cycles. Multi-probe imaging under conditions of whole-body disease assessment and controlled patient radiation exposure provides diverse metabolic information across organ systems, holding significant value for elucidating the pathophysiological mechanisms of complex diseases and discovering new therapeutic targets. 2) AI Technology Empowerment. System Performance Optimization: Personalized balancing of scan speed, tracer dose, CT radiation dose, and image quality. Diagnostic Workflow Optimization: Improving diagnostic efficacy through automatic lesion detection and segmentation. Data Security Management: Applying de-identification techniques to reduce privacy leakage risks. Although the current integration of TB PET/CT and AI is still exploratory, as datasets grow, AI models trained on them are expected to significantly enhance diagnostic accuracy and workflow efficiency, providing more reliable support for clinical decision-making, though this may necessitate the development of new clinical guidelines, regulatory approvals, or reimbursement frameworks.

## 8. Summary

Among the major breakthroughs in PET/CT technology, the development of TB PET/CT represents a milestone. Compared to conventional systems, its core

advantages include: single-bed whole-body coverage imaging; significantly reduced radiotracer dose; substantially shortened scan time; support for ultra-long-delayed imaging; realization of true whole-body dynamic PET imaging, facilitating multi-organ system metabolic correlation analysis and whole-body pharmacokinetic studies of new drugs; and breakthrough capability for simultaneous dual-tracer imaging. With deeper technological exploration and AI integration, the potential of TB PET/CT will be further unleashed, optimizing imaging protocols and pioneering new areas such as ultra-low-dose imaging schemes, fast dynamic parametric reconstruction, and intelligent lesion analysis. In conclusion, TB PET/CT holds vast prospects for clinical application and research value.

### Author Contributions

YAN Chushan conducted literature review, wrote, and revised the article; XU Jiehua revised and reviewed the article.

### Conflicts of Interest

All authors declare no conflict of interest.

### References

- [1] Mingels, C., Caobelli, F., Alavi, A., Sachpekidis, C., Wang, M., Nalbant, H., *et al.* (2023) Total-Body PET/CT or LAFOV PET/CT? Axial Field-Of-View Clinical Classification. *European Journal of Nuclear Medicine and Molecular Imaging*, **51**, 951-953. <https://doi.org/10.1007/s00259-023-06534-4>
- [2] Zhang, Y., Hu, P., He, Y., Yu, H., Tan, H., Liu, G., *et al.* (2022) Ultrafast 30-S Total-Body PET/CT Scan: A Preliminary Study. *European Journal of Nuclear Medicine and Molecular Imaging*, **49**, 2504-2513. <https://doi.org/10.1007/s00259-022-05838-1>
- [3] Hu, P., Zhang, Y., Yu, H., Chen, S., Tan, H., Qi, C., *et al.* (2021) Total-Body 18F-FDG PET/CT Scan in Oncology Patients: How Fast Could It Be? *European Journal of Nuclear Medicine and Molecular Imaging*, **48**, 2384-2394. <https://doi.org/10.1007/s00259-021-05357-5>
- [4] Chen, W., Liu, L., Li, Y., Li, S., Li, Z., Zhang, W., *et al.* (2022) Evaluation of Pediatric Malignancies Using Total-Body PET/CT with Half-Dose [<sup>18</sup>F]-FDG. *European Journal of Nuclear Medicine and Molecular Imaging*, **49**, 4145-4155. <https://doi.org/10.1007/s00259-022-05893-8>
- [5] Zhou, X., Fu, Y., Dong, S., Li, L., Xue, S., Chen, R., *et al.* (2024) Intelligent Ultrafast Total-Body PET for Sedation-Free Pediatric [<sup>18</sup>F]FDG Imaging. *European Journal of Nuclear Medicine and Molecular Imaging*, **51**, 2353-2366. <https://doi.org/10.1007/s00259-024-06649-2>
- [6] Cheng, Z., Chen, L., Wang, X., Wang, Y., Zhao, M., Zan, K., *et al.* (2023) Role of Breath-Hold Lung PET in Stage IA Pulmonary Adenocarcinoma. *Insights into Imaging*, **14**, Article No. 100. <https://doi.org/10.1186/s13244-023-01446-1>
- [7] Zhao, Y., Li, Y., Chen, T., Zhang, W., Wang, L., Feng, J., *et al.* (2021) Image Quality and Lesion Detectability in Low-Dose Pediatric [<sup>18</sup>F]-FDG Scans Using Total-Body PET/CT. *European Journal of Nuclear Medicine and Molecular Imaging*, **48**, 3378-3385. <https://doi.org/10.1007/s00259-021-05304-4>

- [8] Li, Y. and Li, Y. (2024) Petformer Network Enables Ultra-Low-Dose Total-Body PET Imaging without Structural Prior. *Physics in Medicine & Biology*, **69**, Article ID: 075030. <https://doi.org/10.1088/1361-6560/ad2e6f>
- [9] Abdelhafez, Y., Raychaudhuri, S.P., Mazza, D., Sarkar, S., Hunt, H.L., McBride, K., *et al.* (2022) Total-Body  $^{18}\text{F}$ -FDG PET/CT in Autoimmune Inflammatory Arthritis at Ultra-Low Dose: Initial Observations. *Journal of Nuclear Medicine*, **63**, 1579-1585. <https://doi.org/10.2967/jnumed.121.263774>
- [10] Derlin, T., Spencer, B.A., Mamach, M., Abdelhafez, Y., Nardo, L., Badawi, R.D., *et al.* (2022) Exploring Vessel Wall Biology *in Vivo* by Ultrasensitive Total-Body Pet. *Journal of Nuclear Medicine*, **64**, 416-422. <https://doi.org/10.2967/jnumed.122.264550>
- [11] Schmall, J.P., Karp, J.S. and Alavi, A. (2019) The Potential Role of Total Body PET Imaging in Assessment of Atherosclerosis. *PET Clinics*, **14**, 245-250. <https://doi.org/10.1016/j.cpet.2018.12.007>
- [12] Badawi, R.D., Shi, H., Hu, P., Chen, S., Xu, T., Price, P.M., *et al.* (2019) First Human Imaging Studies with the EXPLORER Total-Body PET Scanner. *Journal of Nuclear Medicine*, **60**, 299-303. <https://doi.org/10.2967/jnumed.119.226498>
- [13] Kulkarni, H.R., Maupin, K.A., Brennan, T., Forsberg, J., Rogers, D., Olson, M., *et al.* (2024) First-In-Human Total-Body PET/CT Imaging Using  $^{89}\text{Zr}$ -Labeled MUC5AC Antibody in a Patient with Pancreatic Adenocarcinoma. *Journal of Nuclear Medicine*, **65**, 1815-1815. <https://doi.org/10.2967/jnumed.124.268074>
- [14] Zhang, X., Cherry, S.R., Xie, Z., Shi, H., Badawi, R.D. and Qi, J. (2020) Subsecond Total-Body Imaging Using Ultrasensitive Positron Emission Tomography. *Proceedings of the National Academy of Sciences of the United States of America*, **117**, 2265-2267. <https://doi.org/10.1073/pnas.1917379117>
- [15] Wu, Y., Feng, T., Shen, Y., Fu, F., Meng, N., Li, X., *et al.* (2022) Total-Body Parametric Imaging Using the Patlak Model: Feasibility of Reduced Scan Time. *Medical Physics*, **49**, 4529-4539. <https://doi.org/10.1002/mp.15647>
- [16] Huang, Z., Wu, Y., Fu, F., Meng, N., Gu, F., Wu, Q., *et al.* (2022) Parametric Image Generation with the uEXPLORER Total-Body PET/CT System through Deep Learning. *European Journal of Nuclear Medicine and Molecular Imaging*, **49**, 2482-2492. <https://doi.org/10.1007/s00259-022-05731-x>
- [17] Chen, Z., Cheng, Z., Duan, Y., Zhang, Q., Zhang, N., Gu, F., *et al.* (2022) Accurate Total-Body  $K_i$  Parametric Imaging with Shortened Dynamic  $^{18}\text{F}$ -FDG PET Scan Durations via Effective Data Processing. *Medical Physics*, **50**, 2121-2134. <https://doi.org/10.1002/mp.15893>
- [18] Wang, Z., Wu, Y., Li, X., Bai, Y., Chen, H., Ding, J., *et al.* (2022) Comparison between a Dual-Time-Window Protocol and Other Simplified Protocols for Dynamic Total-Body  $^{18}\text{F}$ -FDG PET Imaging. *EJNMMI Physics*, **9**, Article No. 63. <https://doi.org/10.1186/s40658-022-00492-w>
- [19] Wu, Y., Feng, T., Zhao, Y., Xu, T., Fu, F., Huang, Z., *et al.* (2021) Whole-Body Parametric Imaging of  $^{18}\text{F}$ -FDG PET Using uEXPLORER with Reduced Scanning Time. *Journal of Nuclear Medicine*, **63**, 622-628. <https://doi.org/10.2967/jnumed.120.261651>
- [20] Sun, T., Wu, Y., Wei, W., Fu, F., Meng, N., Chen, H., *et al.* (2022) Motion Correction and Its Impact on Quantification in Dynamic Total-Body  $^{18}\text{F}$ -Fluorodeoxyglucose Pet. *EJNMMI Physics*, **9**, Article No. 62. <https://doi.org/10.1186/s40658-022-00493-9>
- [21] Wang, Y., Abdelhafez, Y.G., Spencer, B.A., Verma, R., Parikh, M., Stollenwerk, N., *et al.* (2024) High-Temporal-Resolution Kinetic Modeling of Lung Tumors with Dual-Blood Input Function Using Total-Body Dynamic Pet. *Journal of Nuclear Medicine*,

- 65, 714-721. <https://doi.org/10.2967/jnumed.123.267036>
- [22] Lu, W., Qiu, J., Xie, X., Li, K., Duan, Y., Li, M., *et al.* (2022) Recognizing Tumor Origin for Lymphoid Tumor of Unknown Primary via Total-Body PET/CT Scan—Case Report. *Frontiers in Oncology*, **12**, Article 766490. <https://doi.org/10.3389/fonc.2022.766490>
- [23] Liu, Z.W., Zhong, J.M. and Zhou, W.L. (2023) <sup>18</sup>F-FDG PET/CT Manifestations of 13 Cases of Primary Testicular Carcinoma and Its Metastases. *Chinese Journal of Medical Imaging Technology*, **39**, 1056-1059.
- [24] Li, J., Ni, B., Yu, X., Wang, C., Li, L., Zhou, Y., *et al.* (2023) Metabolic Kinetic Modeling of [<sup>11</sup>C]Methionine Based on Total-Body PET in Multiple Myeloma. *European Journal of Nuclear Medicine and Molecular Imaging*, **50**, 2683-2691. <https://doi.org/10.1007/s00259-023-06219-y>
- [25] Duan, X., Xia, L., Zhang, Z., Ren, Y., Pomper, M.G., Rowe, S.P., *et al.* (2023) First-in-Human Study of the Radioligand <sup>68</sup>Ga-N188 Targeting Nectin-4 for PET/CT Imaging of Advanced Urothelial Carcinoma. *Clinical Cancer Research*, **29**, 3395-3407. <https://doi.org/10.1158/1078-0432.ccr-23-0609>
- [26] Xin, M., Li, L., Wang, C., Shao, H., Liu, J. and Zhang, C. (2023) Pilot Study on <sup>11</sup>C-CFT Dynamic Imaging Using Total-Body PET/CT: Biodistribution and Radiation Dosimetry in Parkinson's Disease. *Frontiers in Neurology*, **14**, Article 1153779. <https://doi.org/10.3389/fneur.2023.1153779>
- [27] Xin, M., Wang, Y., Yang, X., Li, L., Wang, C., Gu, Y., *et al.* (2024) Exploring the Nigrostriatal and Digestive Interplays in Parkinson's Disease Using Dynamic Total-Body [<sup>11</sup>C]CFT PET/CT. *European Journal of Nuclear Medicine and Molecular Imaging*, **51**, 2271-2282. <https://doi.org/10.1007/s00259-024-06638-5>
- [28] Liu, G., Mao, W., Yu, H., Hu, Y., Gu, J. and Shi, H. (2023) One-Stop [<sup>18</sup>F]FDG and [<sup>68</sup>Ga]Ga-DOTA-FAPI-04 Total-Body PET/CT Examination with Dual-Low Activity: A Feasibility Study. *European Journal of Nuclear Medicine and Molecular Imaging*, **50**, 2271-2281. <https://doi.org/10.1007/s00259-023-06207-2>
- [29] Liu, G., Qi, C. and Shi, H. (2023) Neuroendocrine Neoplasms: Total-Body PET/Computed Tomography. *PET Clinics*, **18**, 251-257. <https://doi.org/10.1016/j.cpet.2022.11.010>
- [30] Sun, H., Huang, Y., Hu, D., Hong, X., Salimi, Y., Lv, W., *et al.* (2024) Artificial Intelligence-Based Joint Attenuation and Scatter Correction Strategies for Multi-Tracer Total-Body PET. *EJNMMI Physics*, **11**, Article No. 66. <https://doi.org/10.1186/s40658-024-00666-8>
- [31] Lv, Y. and Xi, C. (2021) PET Image Reconstruction with Deep Progressive Learning. *Physics in Medicine & Biology*, **66**, Article ID: 105016. <https://doi.org/10.1088/1361-6560/abfb17>
- [32] Sundar, L.K.S., Yu, J., Muzik, O., Kulterer, O.C., Fueger, B., Kifjak, D., *et al.* (2022) Fully Automated, Semantic Segmentation of Whole-Body <sup>18</sup>F-FDG PET/CT Images Based on Data-Centric Artificial Intelligence. *Journal of Nuclear Medicine*, **63**, 1941-1948. <https://doi.org/10.2967/jnumed.122.264063>
- [33] Huang, Z., Li, W., Wu, Y., Guo, N., Yang, L., Zhang, N., *et al.* (2023) Short-axis PET Image Quality Improvement Based on a uEXPLORER Total-Body PET System through Deep Learning. *European Journal of Nuclear Medicine and Molecular Imaging*, **51**, 27-39. <https://doi.org/10.1007/s00259-023-06422-x>
- [34] Bou Hanna, E., Partarrieu, S., Berenbaum, A., Allasonnière, S. and Besson, F.L. (2024) Exploring De-Anonymization Risks in PET Imaging: Insights from a Com-

prehensive Analysis of 853 Patient Scans. *Scientific Data*, **11**, Article No. 932.

<https://doi.org/10.1038/s41597-024-03800-4>

- [35] Selfridge, A.R., Spencer, B.A., Abdelhafez, Y.G., Nakagawa, K., Tupin, J.D. and Badawi, R.D. (2023) Facial Anonymization and Privacy Concerns in Total-Body PET/CT. *Journal of Nuclear Medicine*, **64**, 1304-1309.

<https://doi.org/10.2967/jnumed.122.265280>