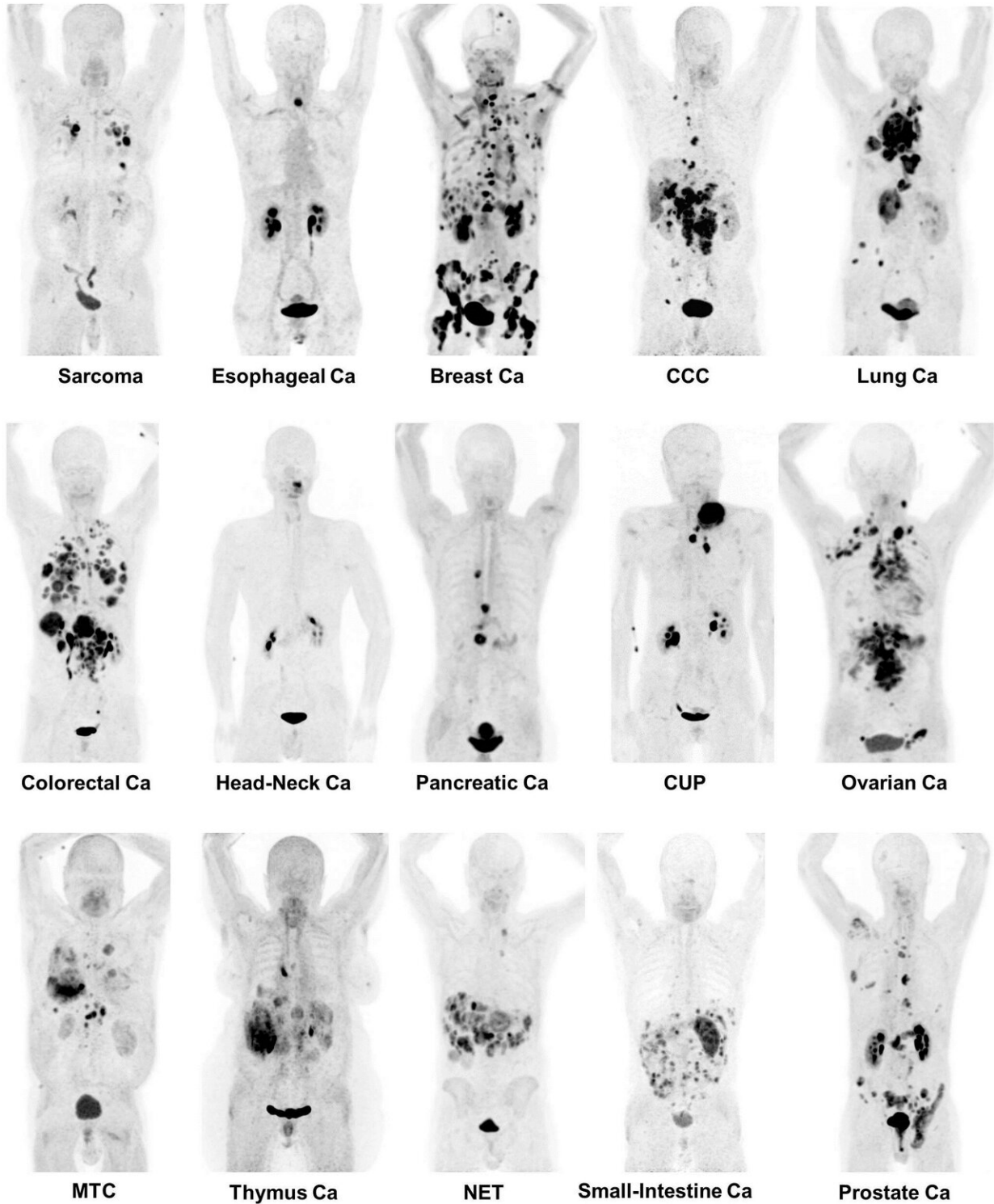# New radiotracer can identify nearly 30 types of cancer

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Maximum-intensity projections of 68Ga-FAPI PET/CT in patients rejecting 15 different histologically proven tumor entities (sorted by uptake in descending order). Ca = cancer; CCC = cholangiocellular carcinoma; CUP = carcinoma of

unknown primary; MTC = medullary thyroid cancer; NET = neuroendocrine tumor. Credit: Kratochwil C, Flechsig P, Lindner Y, et al.

A novel class of radiopharmaceuticals has proven effective in non-invasively identifying nearly 30 types of malignant tumors, according to research published in the June issue of The *Journal of Nuclear Medicine*. Using 68Ga-FAPI positron emission tomography/computed tomography (PET/CT), researchers were able to image a wide variety of tumors with very high uptake and image contrast, paving the way for new applications in tumor characterization, staging and therapy.

The 68Ga-FAPI radiotracer targets cancer-associated fibroblasts, which can contribute up to 90 percent of a tumor's mass. Many cancer-associated fibroblasts differ from normal fibroblasts by their specific expression of the fibroblast activation protein, or FAP. FAP-specific inhibitors were first developed as conventional anticancer drugs; now they have been advanced into tumor-targeting radiopharmaceuticals.

In the retrospective study, researchers used PET/CT to image 80 patients with 28 different kinds of cancer, aiming to quantify 68Ga-FAPI uptake in primary, metastatic or recurring cancers. All patients were referred for experimental diagnostics by their treating oncologists because they were facing an unmet diagnostic challenge that could not be solved sufficiently with standard methods. The injected activity for the 68Ga-FAPI examinations was 122-312 MBq, and the PET scans were initiated one hour after injection. Tumor tracer uptake was measured by SUVmean and SUVmax.

All patients tolerated the examination well. As the overall SUV mean, median and range of 68Ga-FAPI in primary tumors and metastatic lesions did not differ significantly, researchers analyzed all results in one

group.

The highest average SUVmax (SUVmax >12) was found in sarcoma, esophageal, breast, cholangiocarcinoma and lung cancer. The lowest 68Ga-FAPI uptake (average SUVmax