Title of Proposal: **PERCIST Validation**		
QIBA Committee/Subgroup: FDG PET		
NIBIB Task Number(s) which this project addresses:		
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Amount Requested:		

Project aim:

Validate PERCIST metrics using peer-reviewed patient cohorts.

Background and aims:

PERCIST proposes to use (a). peak SUV and (b). a combination of relative change and absolute differences between serial scans. This approach certainly has face-validity but it lacks clinical evidence to support it, as was acknowledged by its inventor (Dr Wahl). Valid, uniform metrics are crucial for clinical acceptance of PET in the context of response evaluation, as well as for its implementation as a read-out of response in drug development.

Until now, several SUV variants are used in the literature, and the concept of applying a combined relative and absolute change to the data-analysis has not yet been validated. Since many authors (including us) did not use the SUVpeak method, and since one (mainly within QIBA) has proposed (and seem to agree on) technical modifications to it, this is the time to embark on re-analysis of existing PET scans using studies that passed quality control of peer-review or internal quality standards (in case of VUmc: Boellaard, Lammertsma).

As a first step, we propose to validate the PERCIST metrics in a single tumor type treated with the currently prevailing different types of therapy, using survival as clinical outcome measure. Since one of the main obstacles for new metrics may be acceptance in the field, we will develop a teaching module to explain the methodology of the quantitative procedures.

Ideally, to expand the validation, other types of cancer and observer variation of data-analysis should be performed in a follow-up project, and the teaching module should be embedded in an competence-based adaptive e-learning system.