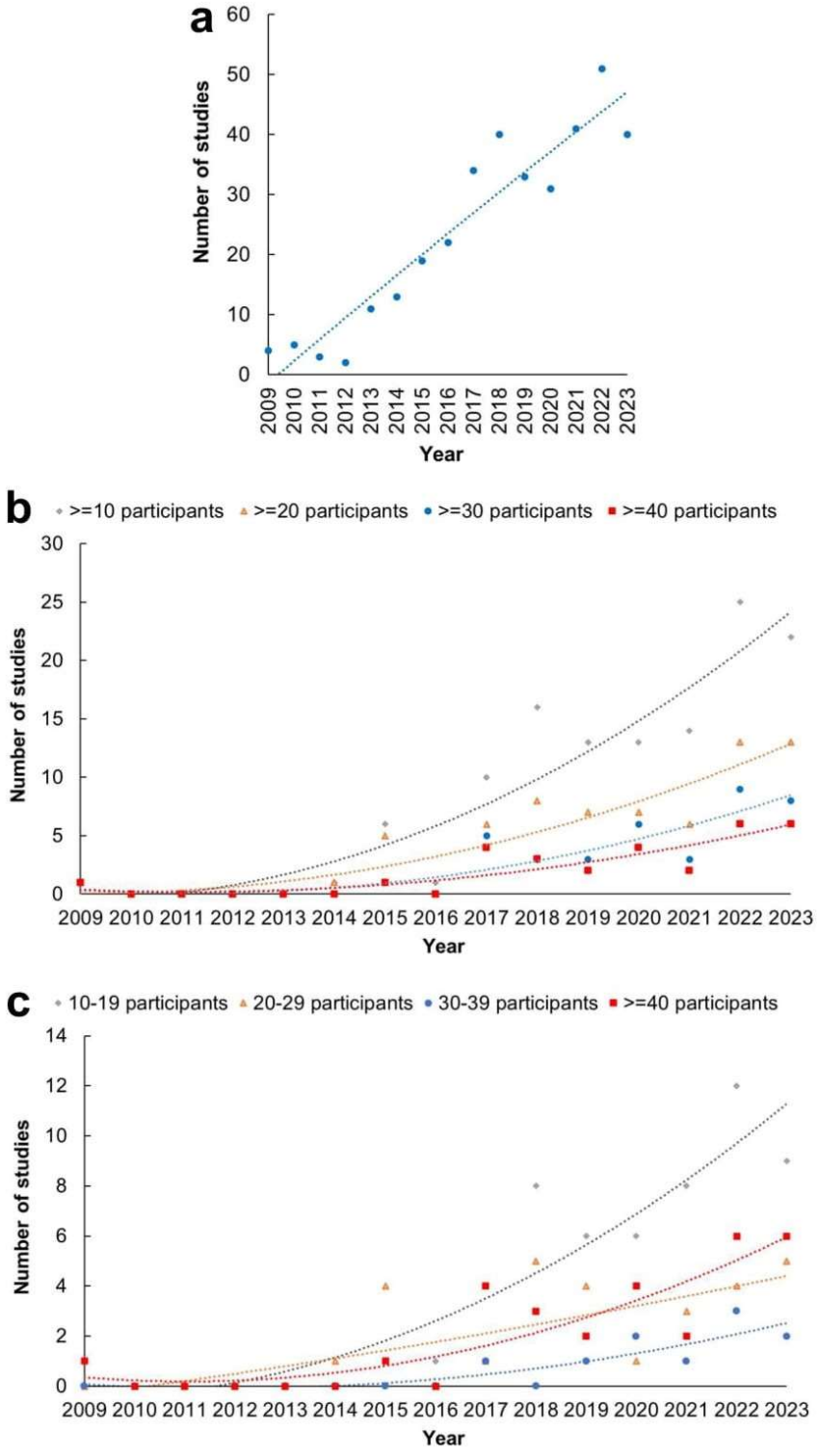
Supplementary Information

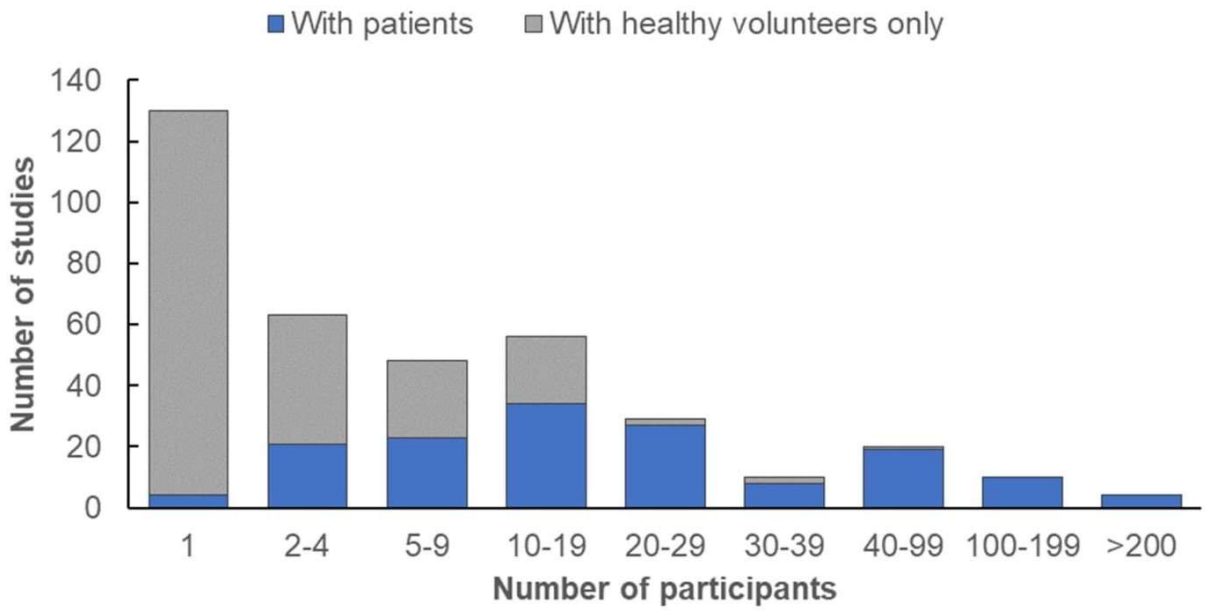
Supplementary Table 1. Optoacoustic systems used in studies with the largest patient cohorts. Abbreviations: CE - Conformité Européene, EU MDR – European Union Medical Device Regulation, FDA PMA – US Food & Drug Administration premarket approval, IRB – Institutional Review Board, MSOT – Multispectral Optoacoustic Tomography, NCT – National Clinical Trial, RSOM – Raster-Scan Optoacoustic Mesoscopy.

Disease examined	Clinical trial information	Patient number	Name of system	Approval	Reference
Breast cancer	Seno-pioneer trial	1972	Imagio	FDA PMA	1
Breast cancer	NCT01943916	1790	Imagio	FDA PMA	2
Breast cancer	NCT04030104	480	Imagio	FDA PMA	3
Peripheral artery disease	NCT04641091	197	MSOT Acuity Echo	CE/EU MDR	4
Peripheral artery disease	NCT04641091	193	MSOT Acuity Echo	CE/EU MDR	5
Rheumatoid arthritis	None. IRB approval only.	183	Custom-built system	-	6
Diabetes	None. IRB approval only.	143	Custom-built RSOM system	-	7
Rheumatoid arthritis	NCT04297475	133	Custom-built system	-	8
Breast cancer	None. IRB approval only.	120	Custom-built system	-	9
Breast cancer	None. IRB approval only.	119	Custom-built system	FDA PMA	10
Diabetes	None. IRB approval only.	115	Custom-built RSOM system	-	11
Psoriasis	None. IRB approval only.	110	Custom-built RSOM system	-	12
Breast cancer	IRB-approved phase 3 pilot study	100	Imagio	FDA PMA	13
Breast cancer	None. IRB approval only.	94	MSOT Acuity Echo	CE/EU MDR	14
Breast cancer	IRB-approved phase 3 pilot study	92	Imagio	FDA PMA	15
Atopic dermatitis	None. IRB approval only.	91	RSOM Explorer C50 System	-	16
Crohn's disease	NCT02622139	91	MSOT Acuity Echo	CE/EU MDR	17
Rheumatoid and psoriatic arthritis	None. IRB approval only.	87	MSOT Acuity Echo	CE/EU MDR	18
Melanoma	IRB approval. Registered at the German Clinical Trials Register.	83	MSOT Acuity Echo	CE/EU MDR	19
Atopic dermatitis	None. IRB approval only.	76	RSOM Explorer C50 System	-	20

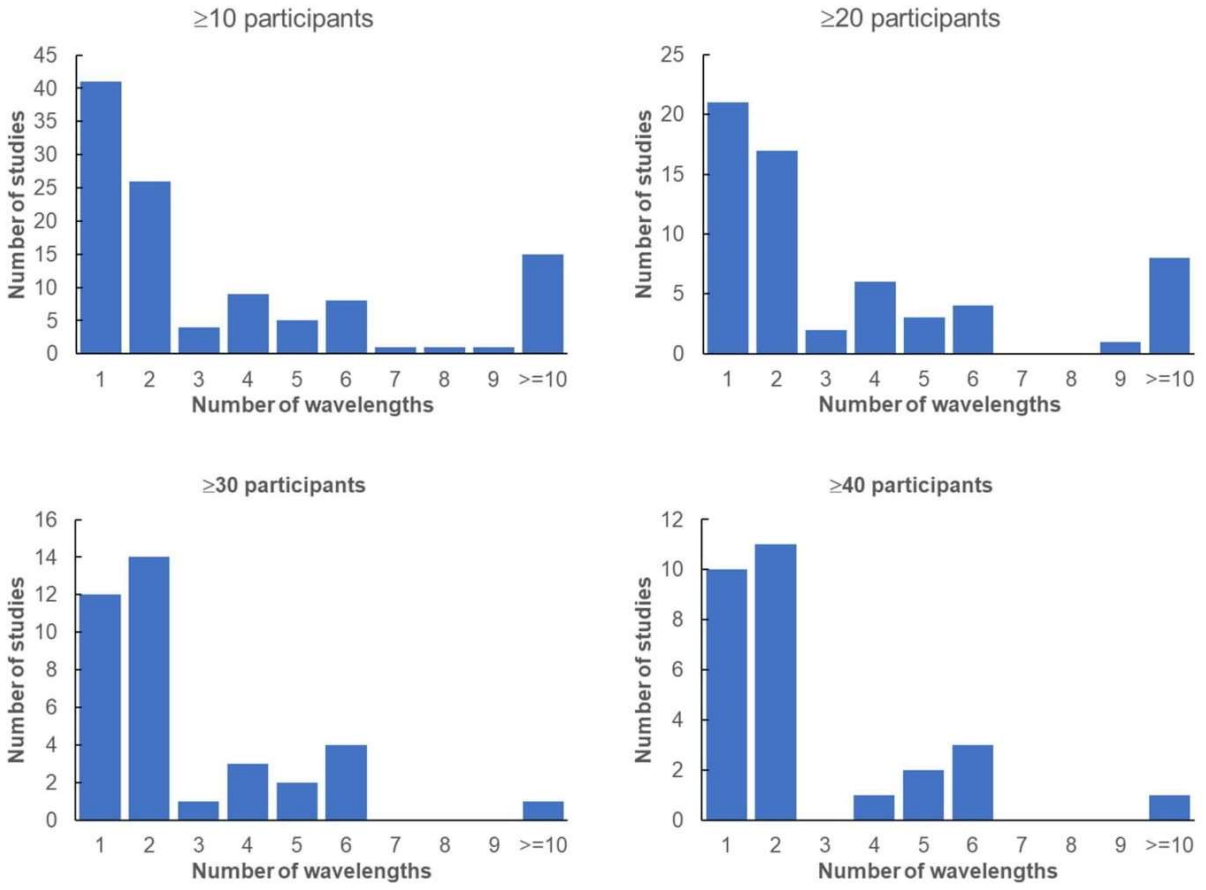
Supplementary Figure 1. Graphs summarizing the growth of in-human optoacoustic studies with different numbers of participants. (a) All studies since 2009, even studies with 1 participant. (b) Studies with more than or equal to 10, 20, 30, or 40 participants plotted together. (c) Studies with 10-19, 20-29, 30-39, or ≥40 participants plotted together.



Supplementary Figure 2. Histogram showing numbers of in vivo optoacoustic studies in humans as a function of the number of participants. Each column is divided into studies with patients (blue) or only healthy volunteers (grey).



Supplementary Figure 3. Number of excitation wavelengths utilized in optoacoustic studies in humans in vivo.



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