Supplementary Table 2. The exact raw institutional name variants were manually consolidated into standardized institutional names for the top 30 institutions in the institutional collaboration network

Standardized institution	Exact raw variants merged	Country	Occurrence*
Sapienza University Rome	SAPIENZA UNIV ROME; UNIV ROMA LA SAPIENZA; UNIV SAPIENZA; SAPIENZA UNIV; UNIV ROME SAPIENZA	Italy	62
Monash University	MONASH UNIV; MONASH UNIV SCH MED; MONASH INST MED RES	Australia	57
University of Pavia	UNIV PAVIA	Italy	45
National Institutes of Health	NIH; NATL INST HLTH; NATL INSTITUTES HLTH	USA	43
Azienda Ospedaliera Sant'andrea	ST ANDREA HOSP; AZIENDA OSPEDALIERA SANT ANDREA	Italy	38
Baylor College of Medicine	BAYLOR COLL MED	USA	36
Klinikum Bayreuth	KLINIKUM BAYREUTH	Germany	35
University of Padua	UNIV PADUA; UNIV PADUA POLYCLIN	Italy	35
US Department of Veterans Affairs	MICHAEL E DEBAKEY VA MED CTR; VA NORTH TEXAS HLTH CARE SYST; VA SAN DIEGO HEALTHCARE SYST	USA	33
University of Helsinki	UNIV HELSINKI	Finland	29
University of Melbourne	UNIV MELBOURNE	Australia	29
IRCC Fondazione San Matteo	IRCCS FONDAZIONE SAN MATTEO	Italy	28
Otto von Guericke University	OTTO VON GUERICKE UNIV	Germany	26
Kawasaki Medical School	KAWASAKI MED SCH	Japan	25
Kyoto University	KYOTO UNIV; KYOTO UNIV HOSP	Japan	24
Helsinki University Central Hospital	HELSINKI UNIV CENT HOSP	Finland	23
University of Bologna	UNIV BOLOGNA; AZIENDA OSPED UNIV BOLOGNA	Italy	23
University of Milan	UNIV MILAN	Italy	22
Hiroshima University	HIROSHIMA UNIV	Japan	21
University of Munich	UNIV MUNICH	Germany	20
University of California System	UNIV CALIF SAN DIEGO; UNIV CALIF LOS ANGELES; UNIV CALIF BERKELEY; UNIV CALIF DAVIS; UNIV CALIF DAVIS HLTH SYST; UNIV CALIF SAN FRANCISCO	USA	19
Vrije Universiteit Amsterdam	VRIJE UNIV AMSTERDAM	The Netherlands	17
Ankara University	ANKARA UNIV	Türkiye	17
Karolinska Institute	KAROLINSKA INST	Sweden	16
Shiga University of Medical Science	SHIGA UNIV MED SCI	Japan	16
University of Texas System	UNIV TEXAS SW MED CTR DALLAS; UNIV TEXAS SOUTHWESTERN MED CTR DALLAS; UT SOUTHWESTERN MED CTR; UNIV TEXAS; UNIV TEXAS MD ANDERSON CANC CTR	USA	15
University of Florence	UNIV FLORENCE	Italy	15
Erasmus MC	ERASMUS MC	The Netherlands	14
Erasmus University Rotterdam	ERASMUS UNIV ROTTERDAM	The Netherlands	14
Harvard University	HARVARD UNIV; HARVARD MED SCH; HARVARD TH CHAN SCH PUBL HLTH	USA	14

*Occurrences represent the final merged institutional quantities used in the network analysis (Gephi) rather than raw counts of institutional appearances. Institutional names were standardized through manual consolidation based on the exact matching of raw affiliation data. No substring-based or automated matching was performed.