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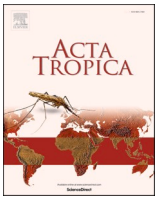

More than seven decades of *Acta Tropica*: Partnership to advance the 2030 Agenda for Sustainable Development

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ABSTRACT

The inaugural issue of *Acta Tropica* has been published in 1944, at a time of utmost international isolation and uncertainty due to World War II. Now, more than seven decades later, *Acta Tropica* is a trusted outlet to communicate and disseminate scientific advances in the fields of parasitology and tropical medicine. As a scholarly, peer-reviewed journal, *Acta Tropica* contributes to the 2030 Agenda for Sustainable Development, particularly the Sustainable Development Goal (SDG) 3, that is "Ensure healthy lives and promote well-being for all of all ages". This article explores how *Acta Tropica* has evolved over time. Our analysis is based on a systematic review of keywords derived from all issues published in a specific year, arbitrarily selected at decadal snapshots (1950, 1960, 1970, 1980, 1990, 2000, 2010, and 2020). Results indicate a decrease in interdisciplinarity in favour of more specialised expertise in various fields of infectious diseases research and public health with a particular emphasis on low- and middle-income countries. Yet, by examining first and last authors' institutional affiliations and classifying countries by the Human Development Index (HDI), we find that most authors are affiliated with institutions in high- and very high-HDI countries. Over time, the mean number of authors on a paper has increased severalfold (from 1.35 in 1950 to 7.51 in 2020). Taken together, *Acta Tropica* has become increasingly globally anchored and contributes not only to SDG 3, but increasingly also to SDG 17, that is "Revitalize the global partnership for sustainable development".

1. Introduction

In 2015, all member states of the United Nations (UN) approved the 2030 Agenda for Sustainable Development (UN, 2015). The 2030 Agenda envisages to end poverty, protect the planet, and ensure prosperity and peace for all human beings. To achieve this, the UN has designated 17 Sustainable Development Goals (SDGs), with a total of 169 associated targets. It is acknowledged that the 17 SDGs are integrated and intertwined, in that they influence each other and that they require joint global action to be achieved. The scientific community is encouraged to support and contribute to the fulfilment of the SDGs. In an effort to contribute to the monitoring of progress towards reaching the SDGs, it has been suggested that scholarly journals might tag articles with regard to the specific SDGs that they address (Capua and Giovannini, 2019). To our knowledge, *Tropical Medicine and International Health* is the first peer-reviewed journal that systematically introduced this feature, as of January 2020 (Galli et al., 2020). The peer-reviewed journal *Acta Tropica*, that is indexed by major electronic databases and mainly contributes to the scientific fields of parasitology and tropical medicine, officially declared to contribute to SDG 3, that is "Ensure healthy lives and promote well-being for all of all ages" (https://www.journals.elsevier.com/acta-tropica/; accessed 21 April 2021).

This article, being part of a series of contributions honouring the 77th anniversary of *Acta Tropica*, examines the development and evolution of the journal, placing particular emphasis on how the journal contributes to the 2030 Agenda. In addition to the journal's mission to contribute to SDG 3, its long tradition in the arena of international collaboration and the production, sharing, and dissemination of global knowledge, it is interesting to specifically focus on SDG 17, that is "Revitalize the global partnership for sustainable development". Since the publication of the

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inaugural issue of *Acta Tropica* in 1944, the scope of the journal has been quite broad, connecting researchers from various scientific strands and geographies with managers of disease control programmes, ministries of health, non-governmental organisations, and the private sector. These relationships fostered global collaborations, thereby producing and circulating knowledge to ultimately reach better health and well-being with a particular focus on marginalised populations in low- and middle-income countries (Keiser and Utzinger, 2005).

The aim of this article was to review the history and development of *Acta Tropica*, showing on the one hand how the journal has evolved into a respected outlet for scientific advances in the fields of parasitology and tropical medicine, and on the other hand highlighting the journal's role in promoting international collaboration and partnership for the benefit of human health, thereby contributing to SDGs 3 and 17. The article goes hand-in-hand with a sister article with pointed emphasis on the publication history and future of *Acta Tropica* (Brattig et al., 2021).

2. Background and methodology

2.1. Setting the scene

In order to examine the history and evolution of collaborations and networks that emerge from an authorship analysis of a systematic selection of articles published in *Acta Tropica*, along with thematic developments, our article is organised as follows. First, we identify key turning points in the rich 77-year history of the journal. Second, we review publication practice and developments over time. This issue is further deepened in an accompanying sister article put forth by Brattig et al. (2021).

Acta Tropica was founded in 1944 by four professors from the University of Basel: (i) Prof. Rudolf Geigy (1902-1995), the founder of the Swiss Tropical and Public Health Institute (Swiss TPH; formerly known as Swiss Tropical Institute) (Janssens, 1995; Meier et al., 2021a); (ii) Prof. Alfred Gigon (1883-1975) (Geigy, 1976); (iii) Prof. Felix Speiser (1880-1949) (Adam, 1950); and (iv) Prof. Rudolf Tschudi (1884-1960) (Meier, 1963). From 1944 up to 1976, *Acta Tropica* was published by the *Verlag für Recht und Gesellschaft*. Subsequently, it was taken over by the Basel-based publisher *Schwabe*, running the journal until 1989. Through this transfer as well as the subsequent move to *Elsevier Publishing Group* in The Netherlands, the broad interdisciplinary scope has been reduced to parasitology and tropical medicine, which shaped *Acta Tropica* to become one of the leading journals in these fields of scientific inquiry (Keiser et al., 2004; Keiser and Utzinger, 2005).

With this publishing and editorial history in mind, we examine in the first part of our article the three decades from 1944 to 1976 and in the second part the period from 1977 to date. All volumes are available online: the volumes from 1944 to 1988 can be accessed on the *E-Periodica* website of the library of ETH Zurich (https://www.e-periodica.ch/digbib/volumes?UID=act-001; accessed 21 April 2021). Issues published from 1989 onwards are available on Elsevier's *ScienceDirect* (https://www.sciencedirect.com/journal/acta-tropica; accessed 21 April 2021). In the first volume in 1944, only 16 articles were published, while more than 400 articles have been published per year in the recent past. For the current analysis, we choose one volume per decade, arbitrarily selecting the years 1950, 1960, 1970, 1980, 1990, 2000, 2010, and 2020. We restricted our analysis to research articles, review articles, and short communications, while omitting editorials, letters to the editor, and corrigenda (Table 1).

2.2. Institutional affiliations

To analyse the institutional affiliations of the journal's contributors, we chose to focus on the first and last authors of each article in the selected snapshot years. Thus, we listed all articles and systematically recorded all institutes with which the first and last authors are affiliated. In total, 870 articles from 771 institutions affiliated with 97 countries were subjected to an in-depth examination (Fig. 1). While for the first period of our analysis, 1944-1976, the number of articles and thus the number of institutes is relatively small, the results can be displayed in a joint column chart (Fig. 2). During the second period, 1977-2020, the number of articles and thus also the number of authors steadily increased, which made it difficult to present all findings in a single chart. Hence, we determined a cut-off point, truncating all those countries for which institutions appeared five times or less in our dataset for each snapshot year. While the results of 1980-2010 are combined into a single chart (Fig. 3), the analysis of the year 2020 is displayed in a separate chart (Fig. 4). This was necessary due to the high number of countries with many contributions and those countries with only a few

Table 1
Number of articles, number of authors, mean number and median of authors per paper, and number of keywords of *Acta Tropica* research articles, review articles, and short communications in eight snapshot years (i.e., 1950, 1960, 1970, 1980, 1990, 2000, 2010, and 2020). There were no review articles published in 1950, 1960, 1970, and 1980 and no short communications published in 1950, 1960, and 1970. Keywords have only been introduced after 1970.

Year	Article type	No. of articles	No. of authors	Mean no. of authors per article	Median of authors per article	No. of distinct keywords in total
1950	Research articles	23	31	1.35	1	-
1960	Research articles	13	17	1.31	1	-
1970	Research articles	26	43	1.65	1	-
1980	Research articles	49*	112	2.29	2	122
	Short communications	3	7	2.33	2	
	Subtotal	52	119	2.29	2	
1990	Research articles	59	234	3.97	3	239
	Review articles	1	1	1.00	1	
	Short communications	5	14	2.80	3	
	Subtotal	65	249	3.83	3	
2000	Research articles	130	557	4.28	4	483
	Review articles	2	2	1.00	1	
	Short communications	8	26	3.25	3.5	
	Subtotal	140	585	4.18	4	
2010	Research articles	125	757	6.06	6	624
	Review articles	16	40	2.50	2	
	Short communications	13	67	5.15	6	
	Subtotal	154	864	5.61	6	
2020	Research articles	302	2,337	7.74	7	1,359
	Review articles	49	275	5.61	5	
	Short communications	46	368	8.00	8	
	Subtotal	397	2,980	7.51	7	
Total		870	4,888	5.62	5	2,827

*Including a supplement issue.

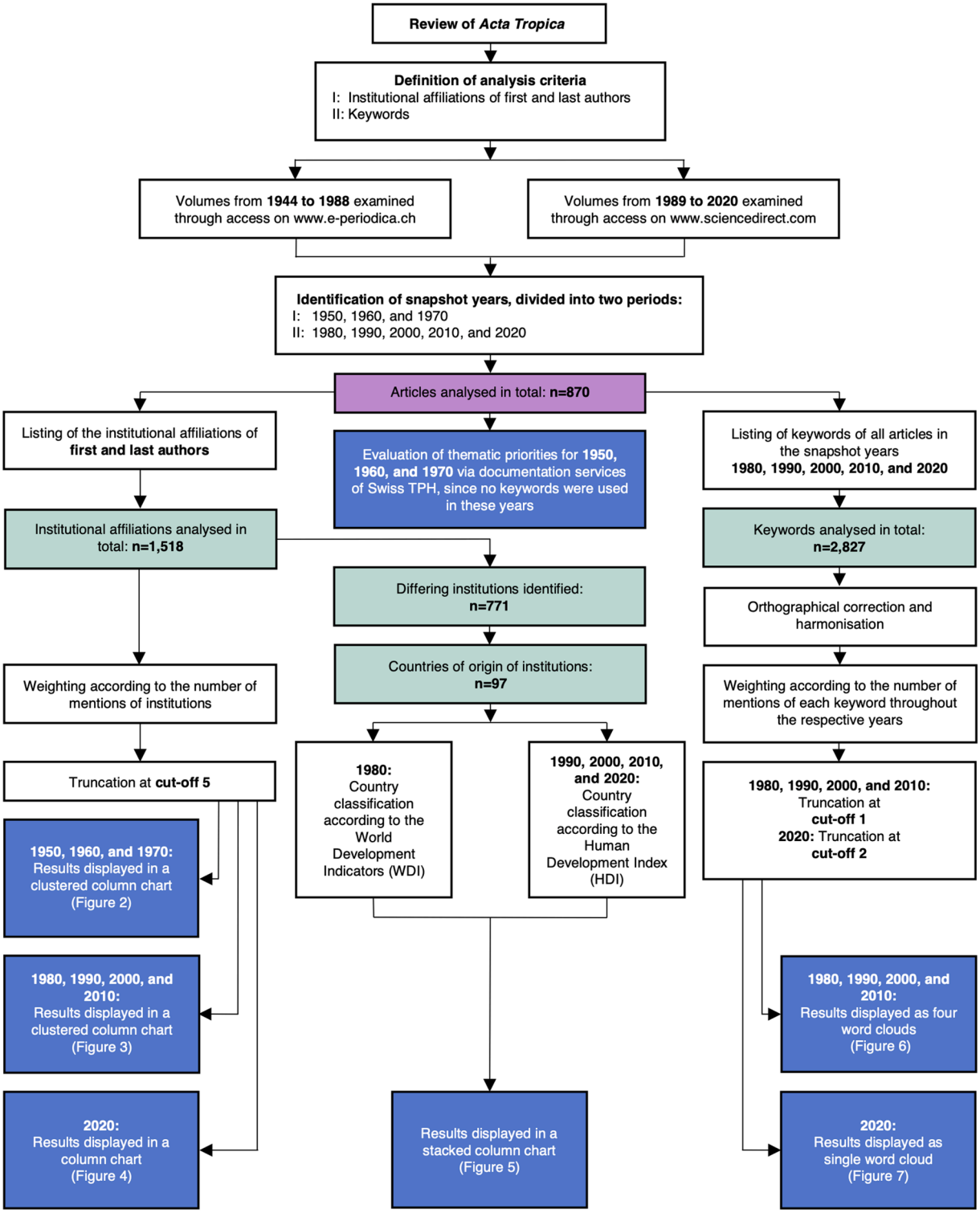


Fig. 1. Process of analysing institutional affiliations, country classifications, and keywords for a bibliometric analysis of the journal *Acta Tropica*, 1950-2020.

contributing authors, which would have led to a cluttered joint chart. Weighting was done by counting the number of mentions of the institutions. For the sake of simplicity, we did not differentiate between various departments within the same institution.

The countries of origin of these institutions were then analysed according to the World Development Indicators (WDI) for 1980 and according to the corresponding Human Development Index (HDI) for 1990, 2000, 2010, and 2020. The WDI were the first analytical classification system implemented by the World Bank in 1978, after several earlier attempts to categorise countries solely based on political criteria, defined by economically strong actors (World Bank, 1980; Nielsen, 2011). Since 1990, the HDI is published in the annual Human Development Report, put forward by the UN Development Programme (UNDP) (http://report.hdr.undp.org/; accessed 21 April 2021). The UNDP adjusts the classification every year according to several criteria, such as gross national income, life expectancy, and mean duration of

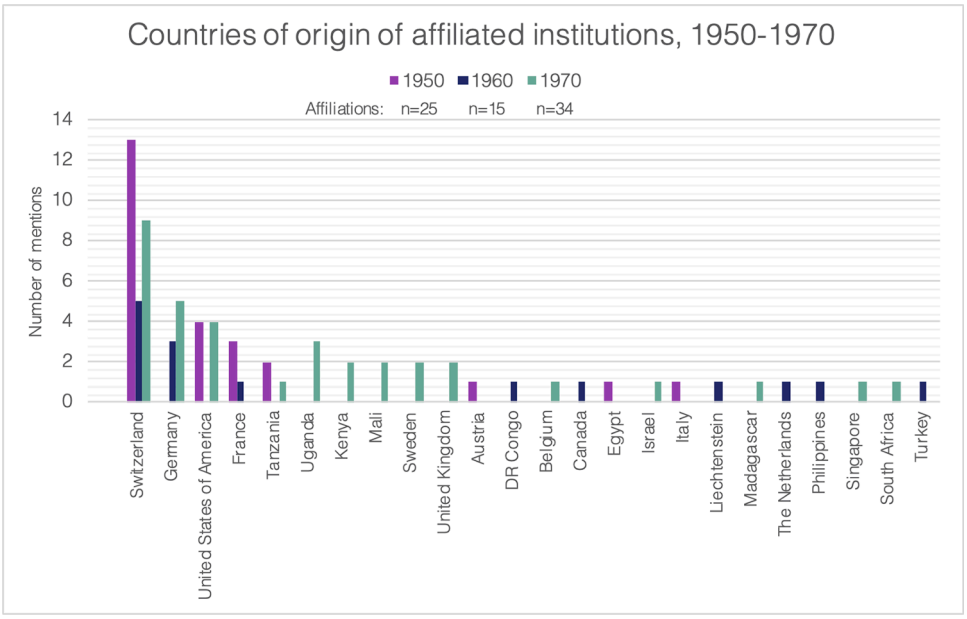


Fig. 2. Countries of origin of first and last authors' affiliated institutions published in *Acta Tropica* in 1950, 1960, and 1970. Weighted according to the number of mentions.

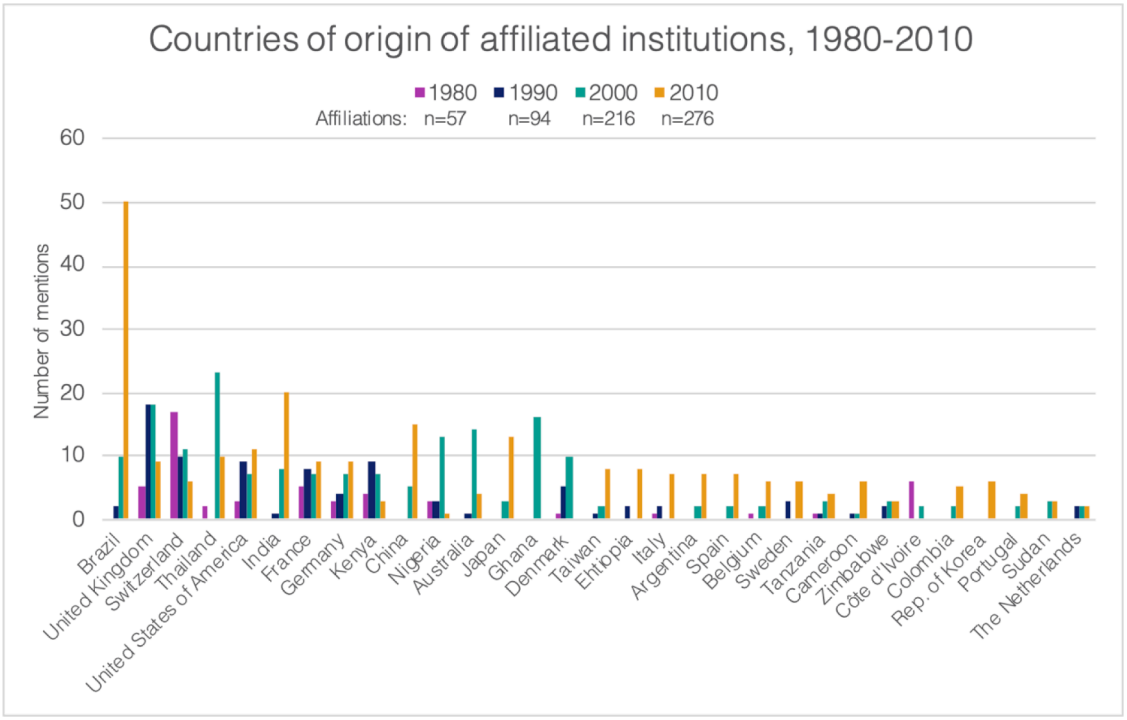


Fig. 3. Countries of origin of first and last authors' affiliated institutions published in *Acta Tropica* in 1980, 1990, 2000, and 2010. Weighted according to the number of mentions and truncated at 5 mentions in all four snapshot years combined.

education. The results of these analyses are displayed in a stacked column chart (Fig. 5).

2.3. Keyword analysis

We examined the thematic development of the scientific research published in *Acta Tropica*. To gain a deeper insight into the changing foci, we analysed the keywords of all articles in five selected snapshot years (i.e., 1980, 1990, 2000, 2010, and 2020). Since in the previous three decades keywords were not used, we evaluated thematic priorities for these years with the help of the documentation services at Swiss TPH.

We recorded a total of 2,827 distinct keywords assigned to 870 articles (Table 1). This ensured that the very terms chosen by the authors were adopted and analysed one-to-one. However, a shortcoming of this method is that thematically related keywords were not grouped (e.g., *Schistosoma mansoni* and schistosomiasis treated as separate keywords). We created word cloud charts for each of the selected years based on the number of mentions of each keyword throughout the year (Fig. 6). Truncating was necessary: the keywords of the years 1980-2010 were truncated at a cut-off of 1, meaning that any keyword which was given

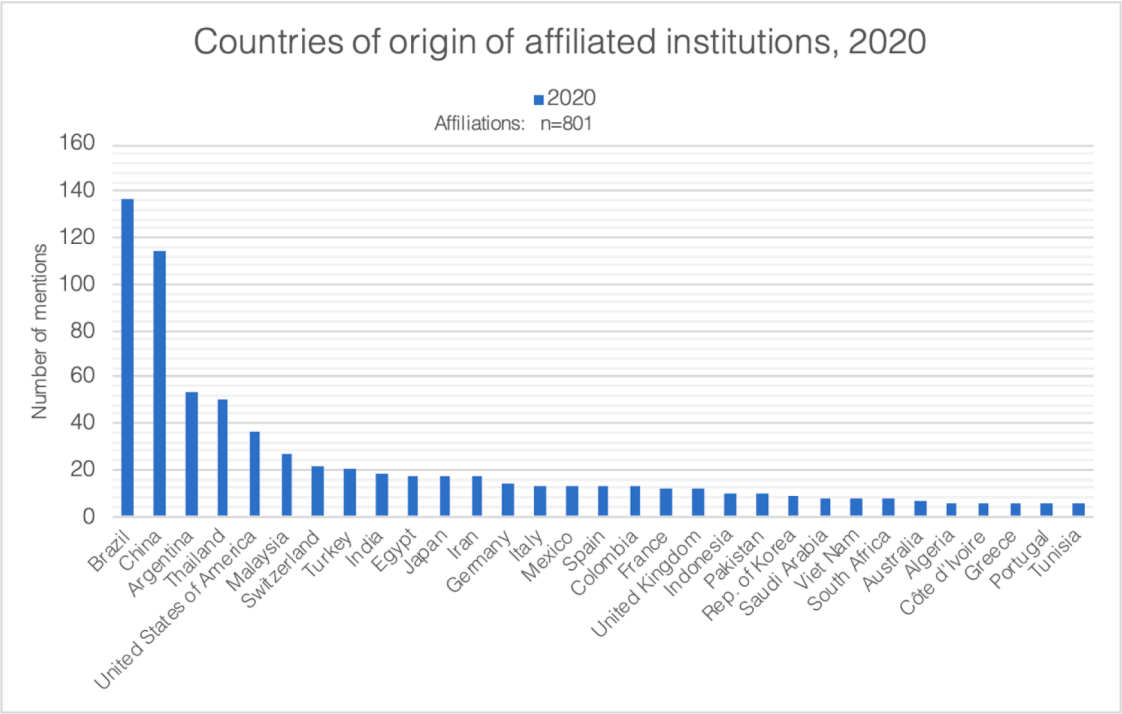


Fig. 4. Countries of origin of first and last authors' affiliated institutions published in *Acta Tropica* in 2020. Weighted according to the number of mentions and truncated at 5 mentions.

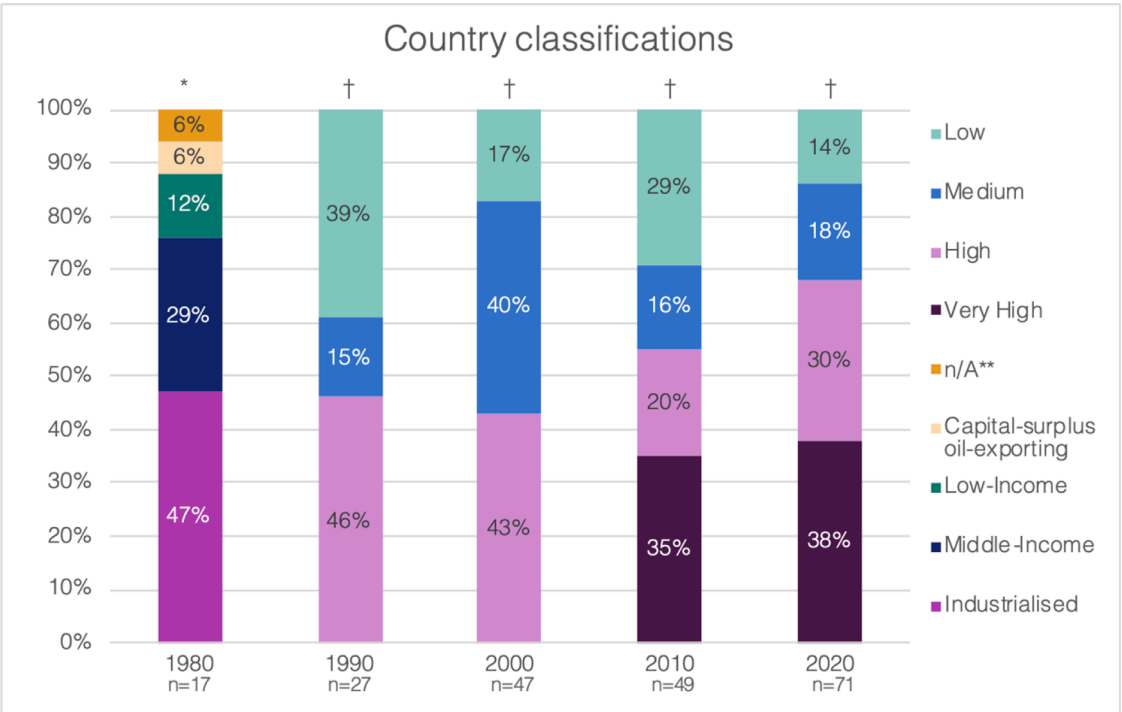


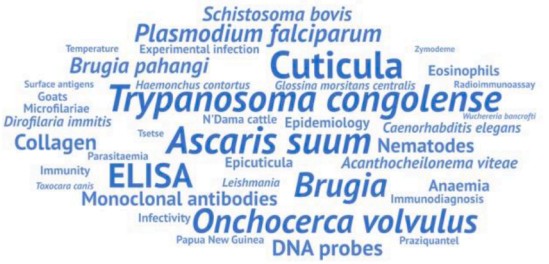
Fig. 5. Classifications for the countries of origin of the affiliated institutions published in *Acta Tropica* in 1980, 1990, 2000, 2010, and 2020. *1980 is classified according to the World Development Indicators (WDI) (industrialised, middle-income, low-income, and capital-surplus oil-exporting). † 1990, 2000, 2010, and 2020 are classified according to the UN Human Development Index (HDI) (high, medium, and low for 1990 and 2000; very high, high, medium, and low for 2010 and 2020). **n/A = classification for this country was not available.

only once among all articles was excluded. The number of keywords in 2020 was so high (n=1,359), that we decided to use a cut-off of 2 and thus excluded all keywords that were mentioned only once or twice (Fig. 7).

2.4. Growing up: 1944-1976

Acta Tropica was launched to provide scientists from the former Swiss Tropical Institute and the University of Basel a new platform to

1980 (52 articles, 122 keywords)



1990 (65 articles, 239 keywords)

2000 (140 articles, 483 keywords)

2010 (154 articles, 624 keywords)

Fig. 6. Keywords according to the number of mentions in articles published in *Acta Tropica* in 1980, 1990, 2000, and 2010 (note that keywords were truncated at 1 mention).

2020 (397 articles, 1,359 keywords)

Fig. 7. Keywords according to the number of mentions in articles published in *Acta Tropica* in 2020 (note that keywords were truncated at 2 mentions.

publish their research (Meier and Weiss, 2014). The four founders and editors were Swiss professors from the fields of zoology, medicine, ethnology, and philology. The thematic focus was thus deliberately kept broad in the first decades of the journal, in order to gain a foothold in the academic world and attract the scholarly work of established researchers. *Acta Tropica* comprised four volumes a year, each containing between three and seven articles.

Although emphasis was placed on contributions from all over the world, from the very first issue in 1944, authors with affiliations to Swiss institutions dominated (Table 2 and Fig. 2). Out of a total of 25 stated affiliations, 13 were from Switzerland in 1950, followed by four affiliations to institutions in the United States of America. The volume of 1960 consisted of only 13 articles, with Swiss institutions still topping the list with five affiliations (Fig. 2). In 1970, 26 articles were published in *Acta Tropica*, whose authors were affiliated with 34 institutions overall. While in the two previous snapshot years the number of articles almost matched the number of affiliations, the difference in 1970 was considerably larger. This means that compared to previous decades, there were already significantly more articles with multiple authors and affiliations. For instance, while the average number of authors per paper

Table 2
Most frequently named affiliations in 1950, 1960, and 1970. Continued for the next years in Table 3.

Most frequently named institutions	Number of affiliations
1950 - articles in total: 23	n=25
Zoological Garden (Basel, Switzerland)	4
University of Basel (Basel, Switzerland)	3
Swiss Tropical Institute (Basel, Switzerland)	2
1960 - articles in total: 13	n=15
Swiss Tropical Institute (Basel, Switzerland)	2
All other institutions are only mentioned once	
1970 - articles in total: 26	n=34
Swiss Tropical Institute (Basel, Switzerland)	8
East African Trypanosomiasis Research Organisation (Tororo, Uganda)	3
All other institutions are only mentioned once	

in 1950 was 1.35, it had increased to 1.65 two decades later. In 1970, Swiss institutions were predominant (n=9), followed by affiliations to Germany (n=5) and the United States of America (n=4) (Fig. 2).

Until the mid-1970s, the number of articles published in each issue varied only slightly and remained at an average of about seven. Meanwhile, the range of international contributions grew; increasingly more first and last authors affiliated to institutions from low- and middle-income countries (descriptors according to current usage) added to the scope of the journal (Fig. 2). However, especially in the early years of the journal, there were consistently contributions from scholars without any institutional affiliation.

Since no uniform system to classify countries existed before 1990, no such categorisation could be applied for the publications in the years 1944-1976. In the 1960s, the word pair "developing and developed countries" was increasingly used, especially in the context of policy discussions (Nielsen, 2011). A glance at Fig. 2 reveals that, while contributions from high-income countries were significantly more frequent in all three displayed years (i.e., 1950, 1960, and 1970), contributions from a wide variety of low- and middle-income countries increased over time, especially from the tropical climate zone.

No keywords were used for indexing the articles in the first three decades. However, a manual review of the article titles and abstracts, as well as an evaluation by Swiss TPH documentation services, gives an impression of how broad the range of topics was. The thematic thrust as a journal with 'tropical' in its name and with the founder of the Swiss Tropical Institute as one of four editors was obvious – articles on parasitological topics dominated, followed by, more generally, articles pertaining to tropical medicine as well as entomological and zoological studies. Interestingly though, a considerable number of contributions originated from the fields of ethnography and anthropology. Other fields such as agriculture, botany, "colonisation", and "missiology" were also published.

2.5. Becoming mature: 1977-2020

With the takeover of *Acta Tropica* by the publisher *Schwabe* in 1977, the journal underwent its first general overhaul. The focus of the content was narrowed and keywords were introduced. *Schwabe* kept the frequency of four issues per year, but steadily increased the number of articles per issue. While there were 26 articles in 1970, the volume of 1980 already included 52 articles (including a supplement issue), with an average of 10 articles per issue. Articles in this volume, on average, were written by 2.29 authors (median: 2 authors), indicating an increase in collaborations compared to the preceding snapshot years (Table 1). Contributions from first and last authors affiliated with Swiss institutions were still predominant (n=17) (Fig. 3). Affiliations from Côte d'Ivoire (n=6), France (n=5), and the United Kingdom (n=5) followed. F. Hoffman-La Roche & Co. and the Swiss Tropical Institute, both located in Basel, were the most frequent institutions contributing articles in 1980 (n=6, each) (Table 3).

In 1980, the mentioned affiliations originated from 17 different countries . Using the WDI classification, we determined that 47% (n=8) of them counted as *industrialized* countries, 29% as *middle-income* countries (n=5), 12% as *low-income* countries (n=2), and 6% (n=1) as *capital-surplus oil-exporting* countries. One (6%) of the countries was not listed in any of the WDI categories (Fig. 5).

The changes following the transfer of *Acta Tropica* from *Schwabe* in Switzerland to the Dutch publisher *Elsevier* in 1989 are clearly visible in the bibliometric analyses. Out of 94 affiliations of first and last authors in the 1990 volume, the Swiss Tropical Institute still led by a narrow margin (n=6) (Table 3). However, with a total of 10 mentions, Switzerland had been overtaken by the United Kingdom with 18 mentions (Fig. 3). Of note, Switzerland was almost on a par with affiliations from the United States of America and Kenya (n=9, each).

The differences became even more apparent in the following decades. The historical 1-volume-and-4-issues-per-year-policy was discontinued. Instead, from 1990 onwards, the number of issues per volume was reduced to three, while the number of articles per issue steadily increased. The volumes of the year 2000 already contained 140 articles, more than twice as many as in 1990. In the 1990 snapshot year, articles were, on average, written by 3.83 authors (median: 3 authors) (Table 1). First and last authors from institutions outside Europe were now strongly represented, with affiliations from Thailand (n=23), Ghana (n=16), Australia (n=14), and Nigeria (n=13) leading, alongside to institutions in the United Kingdom (n=17), followed by Switzerland (n=11), Brazil and Denmark (n=10, each) (Fig. 3). Interestingly, the University of Ghana in Legon (n=6) was named most frequently in 2000 (Table 3).

The data show only a modest increase in the number of articles and affiliations in 2010. With a total of 154 articles, the volumes of 2010 were close to the figures of the year 2000. What has changed noticeably, however, is the mean and median number of authors per article, which has increased steeply since 2000 (Table 1). Another important change is the origin of the affiliations. Indeed, a very distinct increase in contributions from institutions in Brazil (n=50), India (n=20), and China

Table 3
Most frequently named affiliations in articles published in *Acta Tropica* in 1980, 1990, 2000, 2010, and 2020.

Most frequently named institutions	Number of affiliations
1980 - articles in total: 52	n=57
F. Hoffmann-La Roche & Co. (Basel, Switzerland)	6
Swiss Tropical Institute (Basel, Switzerland)	6
All other institutions are only mentioned once or twice	
1990 - articles in total: 65	n=94
Swiss Tropical Institute (Basel, Switzerland)	6
International Laboratory for Research on Animal Diseases (Nairobi, Kenya)	5
Imperial College of Science, Technology & Medicine (London, United Kingdom)	4
2000 - articles in total: 140	n=216
University of Ghana (Legon, Ghana)	12
Mahidol University (Bangkok, Thailand)	11
Swiss Tropical Institute (Basel, Switzerland)	8
2010 - articles in total: 154	n=276
Mahidol University (Bangkok, Thailand)	6
Institut de Recherche pour le Développement (Montpellier, France)	6
Instituto Oswaldo Cruz (Rio de Janeiro, Brazil)	5
Federal University of Minas Gerais (Belo Horizonte, Brazil)	5
University of São Paulo (São Paulo, Brazil)	5
2020 - articles in total: 397	n=801
University of São Paulo (São Paulo, Brazil)	24
University of Malaya (Kuala Lumpur, Malaysia)	22
Mahidol University (Bangkok, Thailand)	12
Consejo Nacional de Investigaciones Científicas y Técnicas (Buenos Aires, Argentina)	12
Swiss Tropical Institute (Basel, Switzerland)	11

(n=15) can be seen (Fig. 3). However, the Mahidol University in Bangkok, Thailand and the Institut de Recherche pour le Développement in Montpellier, France with 6 mentions each, top the list as the most frequently named institutions in this snapshot year (Table 3). This indicates that the first and last authors were affiliated to a broad range of different institutions and rarely shared the same affiliation.

In 2014, *Elsevier* discontinued the division of volumes by issues. Instead, from then on, one volume per month was published on average, each containing around 30 articles. Indeed, 397 articles were published in the 12 volumes of 2020 (Table 1). This indicates a substantial increase in the number of articles since 2010. In parallel, the average number of authors has increased compared to the previous years (mean number of authors in 2010 for the three main types of publications was 5.61) (Table 1). In 2020, the number of affiliations of first and last authors amounted to 801, most of which originated from Brazil (n=137) and China (n=114), followed at a great distance by Argentina (n=53), Thailand (n=50), the United States of America (n=36), and Malaysia (n=27) (Fig. 4). The University of São Paulo in Brazil (n=24) and the University of Malaya in Kuala Lumpur, Malaysia (n=22) were by far the most frequently named affiliations (Table 3).

Fig. 5 illustrates the classification of the countries of origin according to HDI for 1990 to 2020. From its implementation in 1990 until 2009, the HDI used three categories to categorise countries: *low*-, *middle*-, and *high*-human development. In the Human Development Report of 2009, a fourth category was introduced: *very high* human development (Nielsen, 2011). In our analysis, all years have in common that a majority of first and last authors are affiliated with institutions from either *industrialised, high,* and/or *very high* classified countries. The contributions of authors from countries with a *low* HDI varied greatly from year to year, but peaked in 1990 with 39% (n=10 out of 26 countries). Strikingly, in 2020, only one third of all named affiliations originated from countries with a *low* or *medium* HDI (32%, n=23 out of 71 countries), while in 2010 they accounted for 45% (n=22 out of 49 countries) and in 2000 for 57% (n=27 out of 47 countries) taken together.

2.6. Thematic specialisation

The keyword analysis until 1990 reflects the tightly interlinked history of *Acta Tropica* and the Swiss Tropical Institute. Compared to the thematic range of the years 1944-1976, which also included topics such as "history", "geography", or "botany", the word clouds of 1980 and 1990 show more narrowly bound epidemiological research (Fig. 6). They reveal a strong focus on those areas which are today referred to as "neglected tropical diseases" (NTDs). This area of expertise is maintained at Swiss TPH to date and is strongly rooted in Swiss TPH's historic ties with various African countries. In the late 1970s and early 1980s, the fight against schistosomiasis was often put on centre stage by African governments. Schistosomiasis emerged as a consequence of large-scale infrastructure development projects (e.g., large dams and irrigation systems) and therefore constituted a high disease burden, especially for impoverished rural populations (Jobin, 1999; Steinmann et al., 2006). This was the case in Tanzania, for instance, where the intermediate host snail flourished in the water ponds along the railway line of the Tanzania-Zambia Railway (TAZARA), which was constructed between 1970 and 1975 and connects the burgeoning Dar es Salaam harbour with the Zambian copper belt (Zumstein, 1983). In the early 1980s, Swiss TPH intended to integrate its former Field Laboratory in Ifakara into a Tanzanian health system and – aligned with Tanzanian health priorities – highly invested in a better understanding of the epidemiology and control of schistosomiasis and other NTDs (Tanner et al., 1994; Pervilhac et al., 1998; Meier, 2014).

After the transfer of *Acta Tropica* to *Elsevier* in 1989, the strong presence of Swiss TPH, as revealed by the keyword analysis presented here, diminished. Table 4 shows how the number of first and last authors affiliated with Swiss TPH has changed over time. The dwindling link between the journal and the institute after the transfer to *Schwabe* in 1977 and to *Elsevier* in 1989 is clearly visible.

Table 4
Number and percentage of first and last authors' affiliations of articles published in *Acta Tropica* in 1950, 1960, 1970, 1980, 1990, 2000, 2010, and 2020, linked to Swiss TPH (formerly Swiss Tropical Institute).

Year	Total no. of affiliations	Affiliations to Swiss Tropical Institute / Swiss TPH	Percentage
1950	25	2	8.0%
1960	15	2	13.3%
1970	34	8	23.5%
1980	57	6	10.5%
1990	94	6	6.4%
2000	216	8	3.7%
2010	276	3	1.1%
2020	801	11	1.4%

The word cloud of 1990 anticipates the general process of research specialisation in the fields of tropical medicine and parasitology. Somehow contrasting to this is the word cloud of 2000 with a pronounced double focus on NTDs and especially on malaria ("*Plasmodium falciparum*" and "malaria"). A peculiar aspect is the high occurrence of the term "*Burkholderia psuedomallei*", due to a special issue on melioidosis in 2000.

From 2000 onwards, research and development (R&D) pertaining to malaria experienced a major push, unleashed not only by newly available 'tools' (e.g., long-lasting insecticidal nets, drugs, and diagnostics), but also by new forms of partnerships between public and private actors, which revolutionised R&D of new antimalarials (Nwaka, 2005; Bhatt et al., 2015; Hooft van Huijsduijnen et al., 2019; Meier et al., 2021b). The reinvigorated concern with malaria has enabled many countries to control or even eliminate the disease (such as Vanuatu, Solomon Islands, and most recently China) and led to measurable reductions in child mortality WHO, 2011; Eisele et al., 2012).

The word cloud of 2020 (Fig. 7) is far from conveying such a clear picture. It should be noted that the keywords have been adapted orthographically, but not thematically. This means that keywords that belong together thematically (such as "malaria", "malaria control", "mosquito", "*Plasmodium falciparum*", etc.) are not listed under a single term (e.g., "malaria"). Instead, we have stayed as close as possible to the individual terms put forward by the authors. In 2020, in particular, this means that a central focus such as malaria research is no longer as evident in the word cloud. Instead, it is an expression of a broad and highly clustered mosaic of vectors, diseases, and sophisticated research techniques. However, this word cloud is more informative in what it conceals than in what it reveals. What is striking is the lack of non-communicable diseases (NCDs), such as cardiovascular diseases, diabetes, or obesity. These conditions were formerly associated with affluent industrial societies but during the last two decades, academic research has experienced a paradigm shift towards analysing the 'double burden of disease' (i.e., the emergence of NCDs) in low- and middle-income countries (Remais, 2013; Eze et al., 2017; Mapesi and Paris, 2019). With the caveat that one year is not enough to draw robust conclusions, it is obvious that research on NCDs and their interactions with infectious diseases has yet to gain traction in *Acta Tropica.*

3. Conclusion

Our bibliometric analysis of the more than seven decades of *Acta Tropica* revealed how the journal has narrowed its initially very broad scope to a focus primarily on topics related to parasitology and tropical medicine, in keeping with its editorial history. However, along with the continuously and lately exponentially increasing number of articles, the average number of authors per article has steadily grown, too (Table 1). Especially after 2000, the number of multiple authorships has grown significantly, highlighting a culture of collaboration in science. At the

same time, the international diversity of first and last authors' affiliated institutions has continuously increased. Tables 2 and 3 indicate that until about 2000, the origin of contributions from tropical regions was mainly Africa, while thereafter contributions from Asia and South America increased strongly. Out of a total of 1,518 affiliations of first and last authors in all article from our eight snapshot years taken together, Brazil comes at position number one with 199 affiliations, followed by China (n=134), Switzerland (n=93), Thailand (n=85), and the United States of America (n=74). The analysis of country classifications points to a majority of authors' affiliations to institutions in "high" and "very high" HDI countries, which fits the general trend in health research publications (Sumathipala et al., 2004; González-Alcaide et al., 2017). Contributions by authors affiliated with institutions in low- and middle-income countries have also made up a share since the beginning of the journal. However, what Hedt-Gauthier et al. (2019) have pointed out for collaborative health research is also true for *Acta Tropica*: although global health research is very often based on international collaborations, local authors are significantly underrepresented, particularly in the first and last author positions (Keiser and Utzinger, 2005); Smith et al., 2014; Abimbola, 2019). They suggest that in collaborations between, for example, African researchers and researchers from Europe and North America, African co-authors are far less likely to be in the first or last author positions, even when it concerns research in their country. This often results in disproportionate credit for the researchers from high-income countries (Fourie, 2018; Hedt--Gauthier et al., 2018). While *Acta Tropica* has significantly broadened its base of institutional affiliations over the years, the most represented countries today are Brazil, China, Switzerland, and Thailand; countries that are considered emerging economies (Brazil, China, and Thailand) or fully industrialised countries (Switzerland). Thus, in order to clearly align with SDG 17, it would be appropriate for more contributions from first and last authors affiliated with low- and middle-income countries. One way to achieve this could be for the editors of *Acta Tropica* to invite authors from endemic areas to submit reviews and to compile special issues.

The keyword analysis shows the development from a journal with a broad interdisciplinary range of topics in the first decades to an esteemed journal for cutting-edge scientific research in the specialized fields of parasitology and tropical medicine. *Acta Tropica* thus steadily expanded knowledge on the theory and implementation of health-related issues, and thereby contributes to SDG 3. The breadth of topics over the years reflects changing health issues and policies, as well as advances in scientific methodology. However, the keyword analysis also reveals that important public health topics have not yet found their way into *Acta Tropica*'s focus, such as NCDs, which now constitute a major health burden also in low- and middle-income countries (Boutayeb and Boutayeb, 2005; Lozano et al., 2012; Bigna and Noubiap, 2019). Thus, in order to contribute as best as possible to SDG 3, it would be desirable for articles in *Acta Tropica* to also address the dual burden of NCDs and infectious diseases in the future (Brattig et al., 2021).

While today's large number of first and last authors and the wide international scope of *Acta Tropica* indicate that diverse partnerships exist across national and institutional borders, there certainly exists a potential for more integrated collaborations – both in terms of the author's affiliations and the thematic range. We suggest that the journal could reach this potential through an open mind towards multi-, inter-, and transdisciplinary approaches beyond the boundaries of the natural sciences, as well as very significantly through an open access policy. In this way, existing hierarchies could be broken down and hitherto neglected people, institutions, and systems could be better represented – to more fully contribute to the SDGs 3 and 17.

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Declaration of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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