



Biological resources for health care programs and epidemiological control in Brazil

Claude Pirmez, Manuela da Silva & Elisa Cupolillo

SESSION 3B: BIOLOGICAL MATERIAL FOR HEALTH CARE INNOVATION AND EPIDEMIOLOGICAL CONTROL



BRAZILIAN BIODIVERSITY AND EMERGING AND RE-EMERGING ZOOONOSIS

ECONOMICAL IMPACT OF EMERGING DISEASES

COLLECTIONS, BRC AND HEALTH SURVEILLANCE

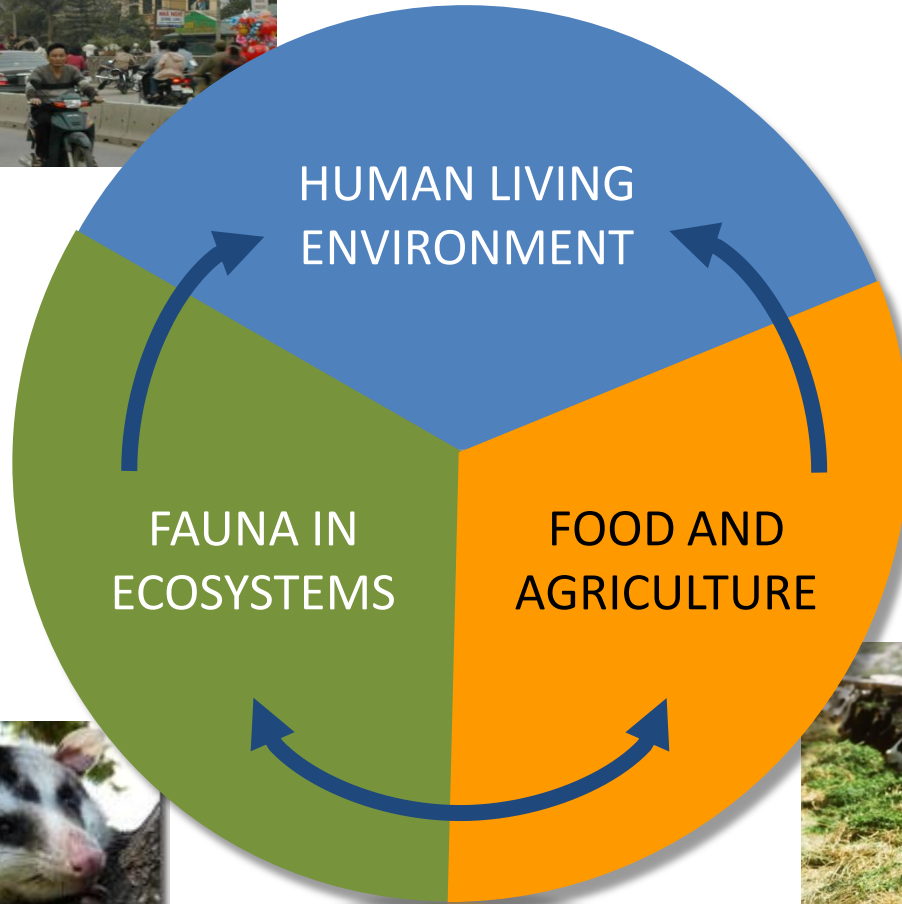
HEALTH BRC: THE ROLE OF FIOCRUZ

SESSION 3B: BIOLOGICAL MATERIAL FOR HEALTH CARE INNOVATION AND EPIDEMIOLOGICAL CONTROL

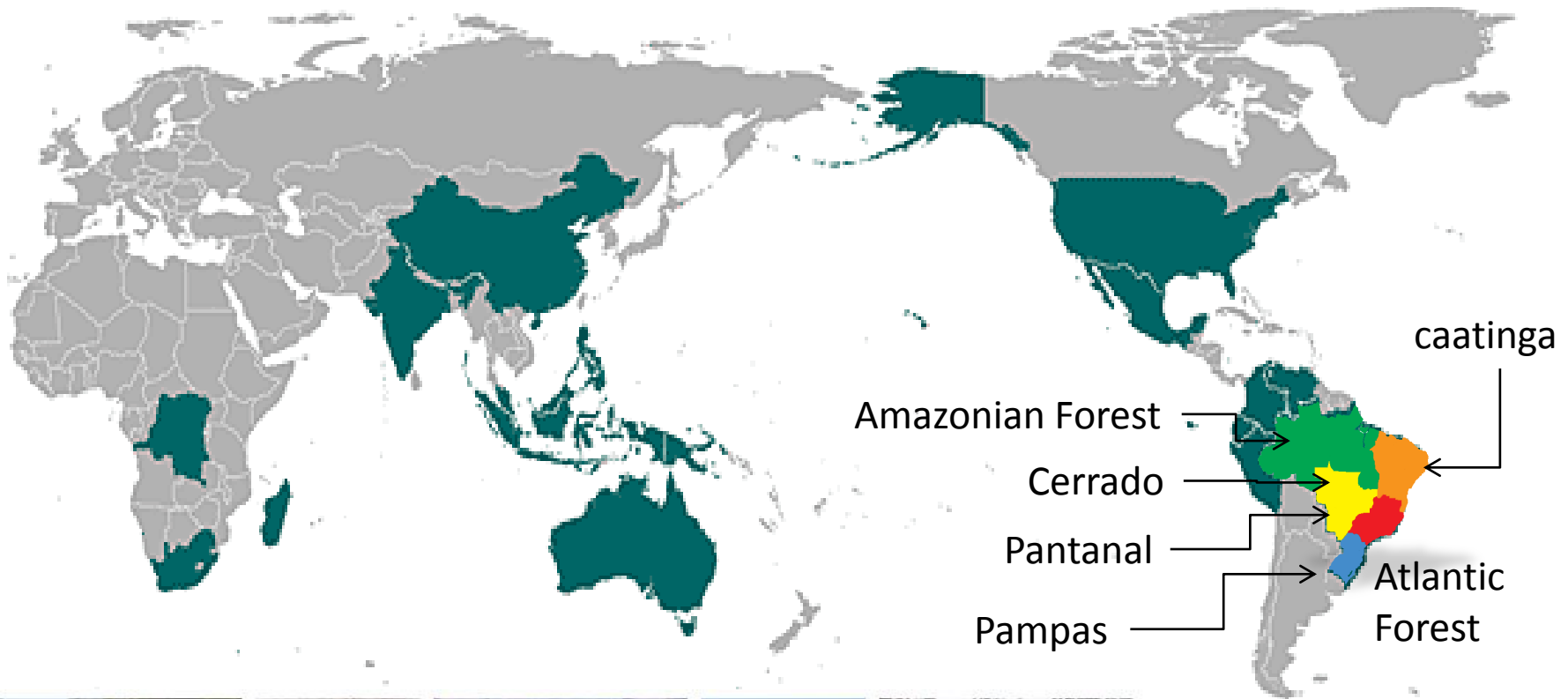




**new or re-emerging
infectious agents
that emerge from
different sources
are a growing
global threat**



MEGADIVERSE COUNTRIES



Bioma: Amazônia
Foto: Ana Maria Jansen



Bioma: Caatinga
Foto: Ana Maria Jansen



Bioma: Pantanal
Foto: Heitor Herrera

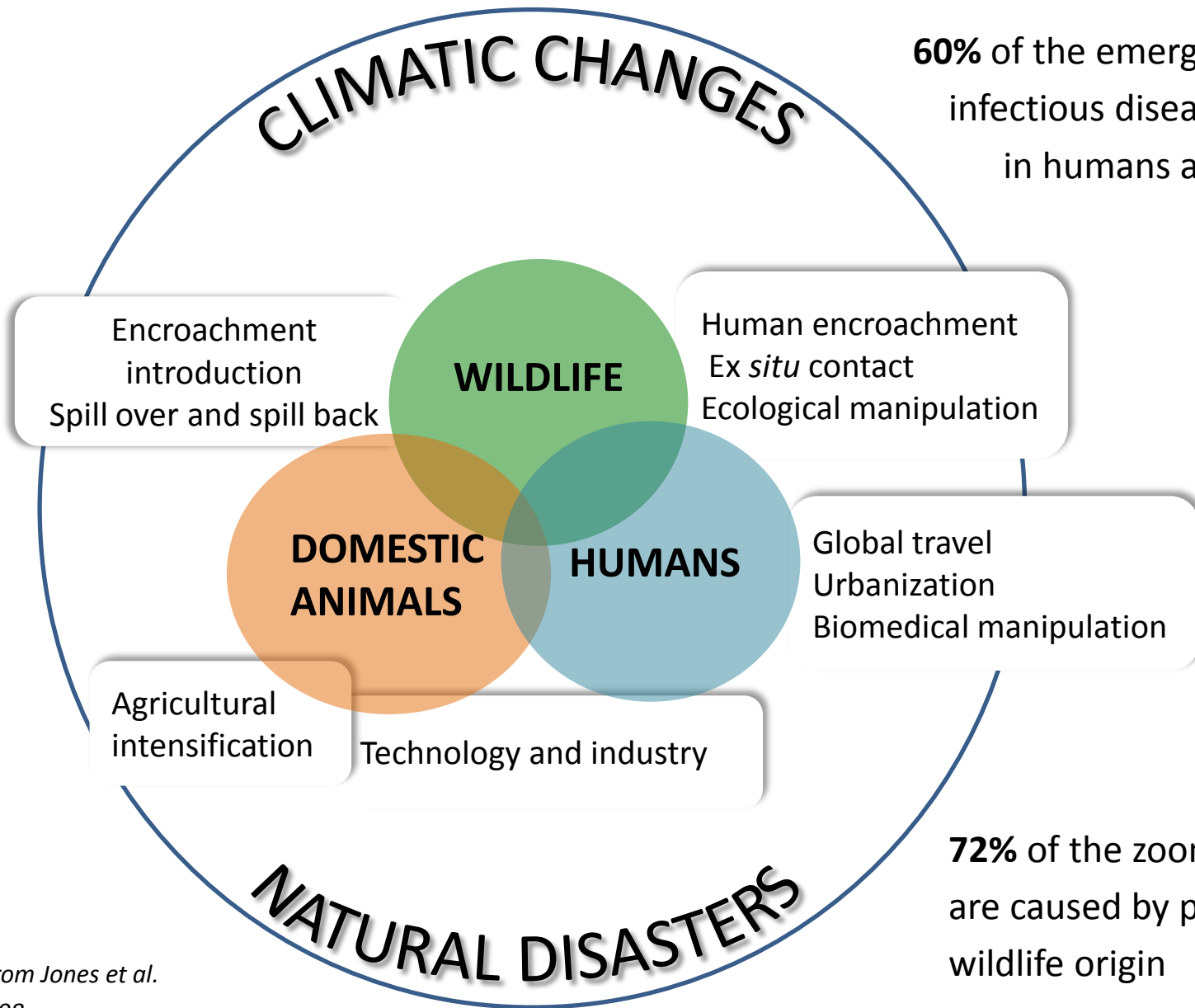


Bioma: Cerrado
Foto: Ana Maria Jansen



Bioma: Mata Atlântica
Foto: Rodrigo Mexas





60% of the emerging infectious diseases in humans are **zoonotic**

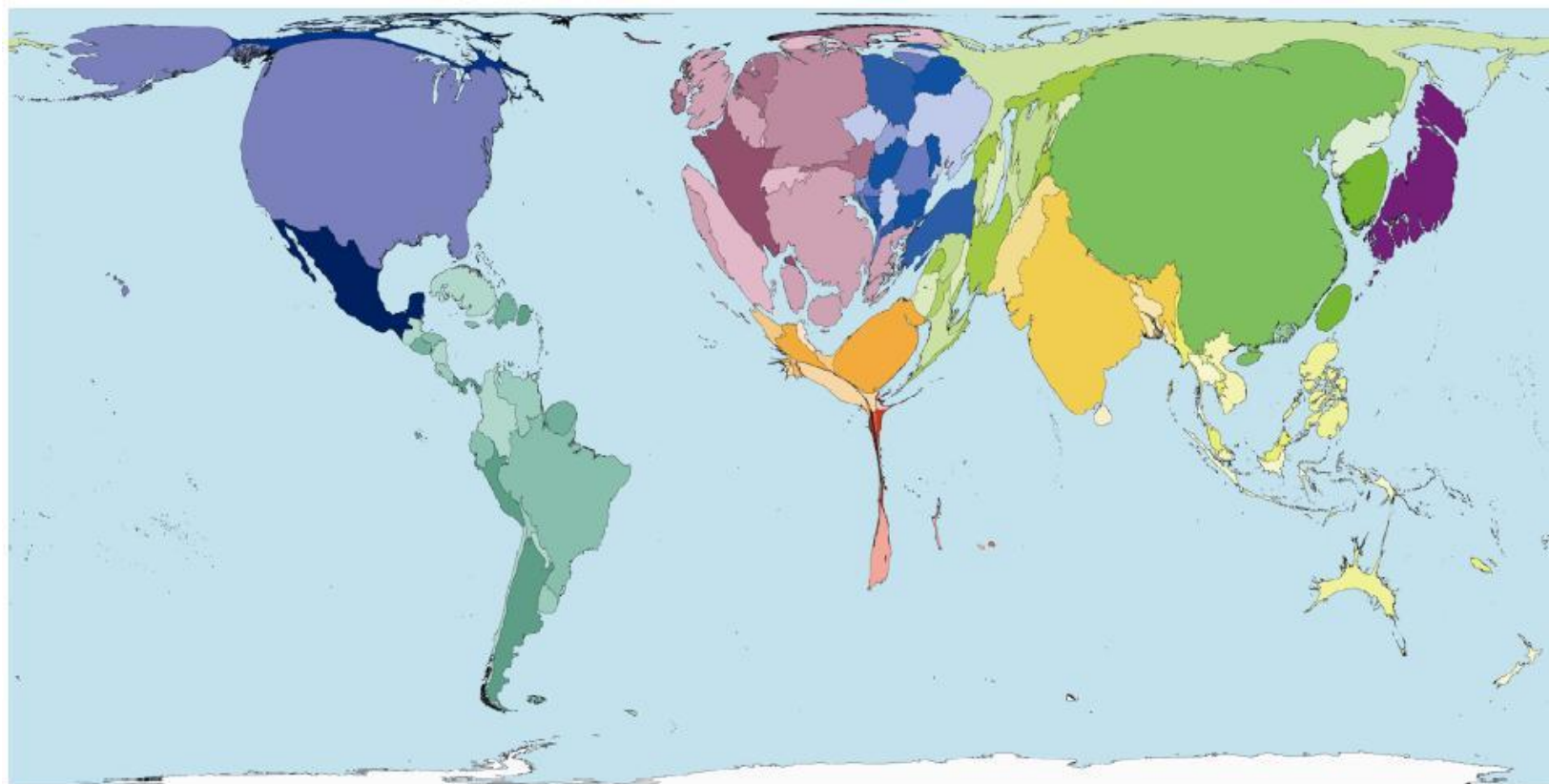
72% of the zoonotic events are caused by pathogens of wildlife origin

modified from Jones et al.
Nature 2008



Figure 3. Physicians Working: Worldmapper Poster 219

Source of data used to create map: World Health Organization, 2004, Human Resources for Health, Basic data.

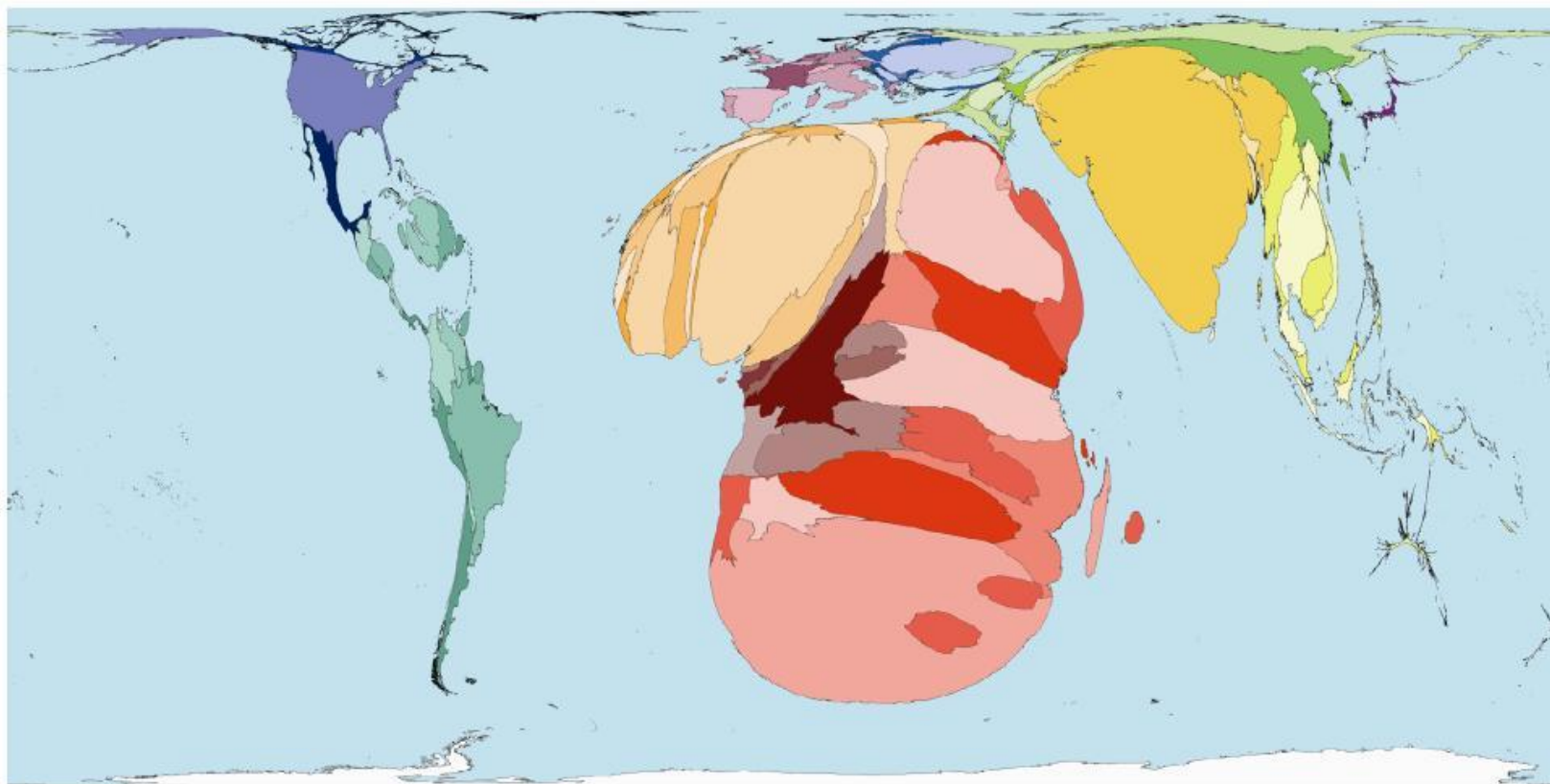


doi:10.1371/journal.pmed.0040001.q003



Figure 5. HIV/AIDS Prevalence: Worldmapper Poster 227

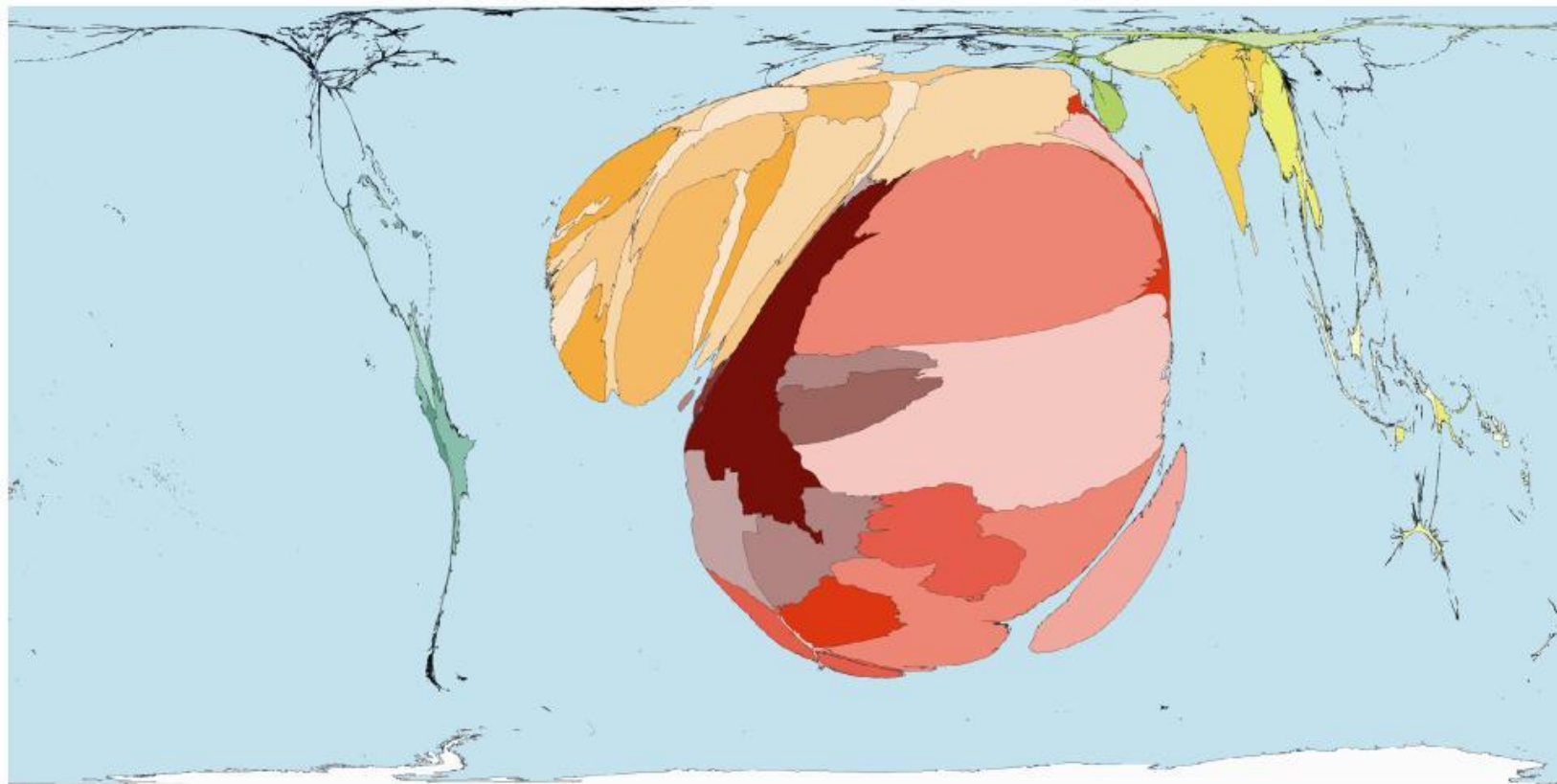
Source of data used to create map: United Nations Development Programme, Human Development Report 2004.



doi:10.1371/journal.pmed.0040001.g005

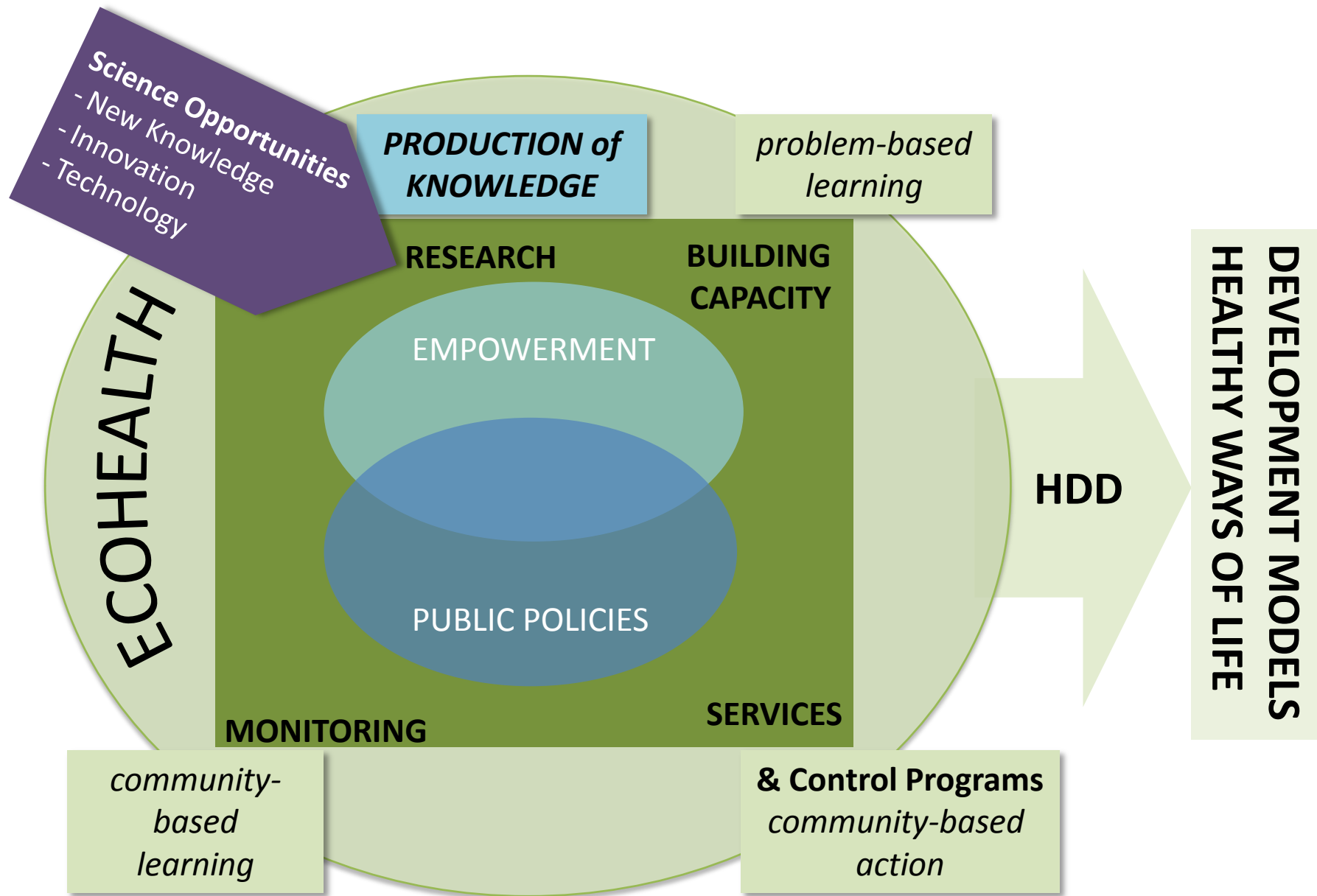
Figure 6. Malaria Cases: Worldmapper Poster 229

Source of data used to create map: World Health Organization and UNICEF, World Malaria Report 2005.



doi:10.1371/journal.pmed.0040001.g006



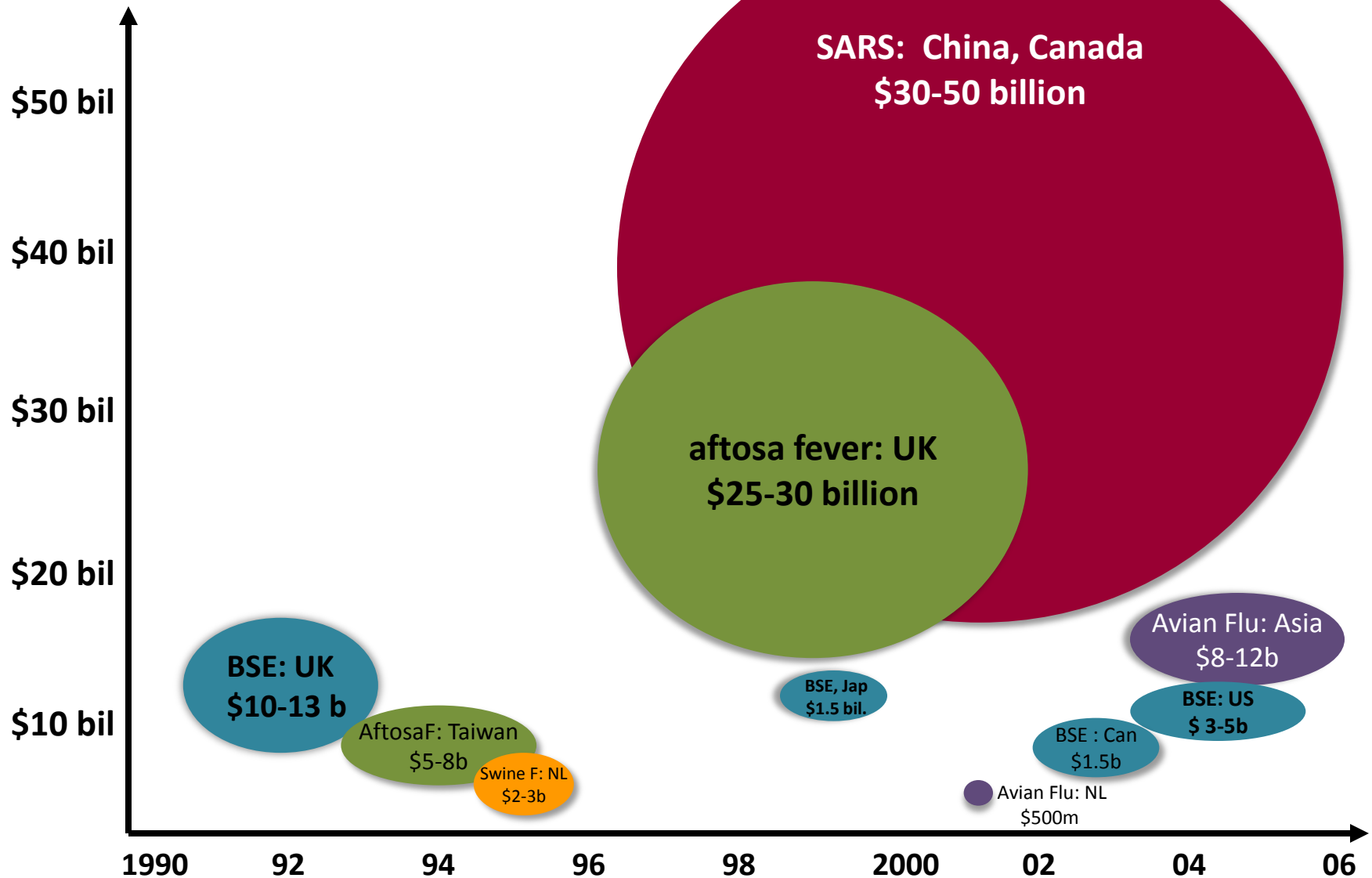


BRAZILIAN BIODIVERSITY AND EMERGING AND RE-EMERGING ZOOZOSIS
ECONOMICAL IMPACT OF EMERGING AND RE-EMERGING DISEASES
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Economical impact of infectious diseases



The Health Industrial Complex

Chemical and Biotechnological industries

Biopharmaceuticals and drugs
Vaccines
Blood products
Diagnostic reagents

Equipment industries

Mechanical
Electronic
Orthesis and prosthesis

Health Services sector

Hospitals
Outpatient units
Diagnostic laboratories and treatment services

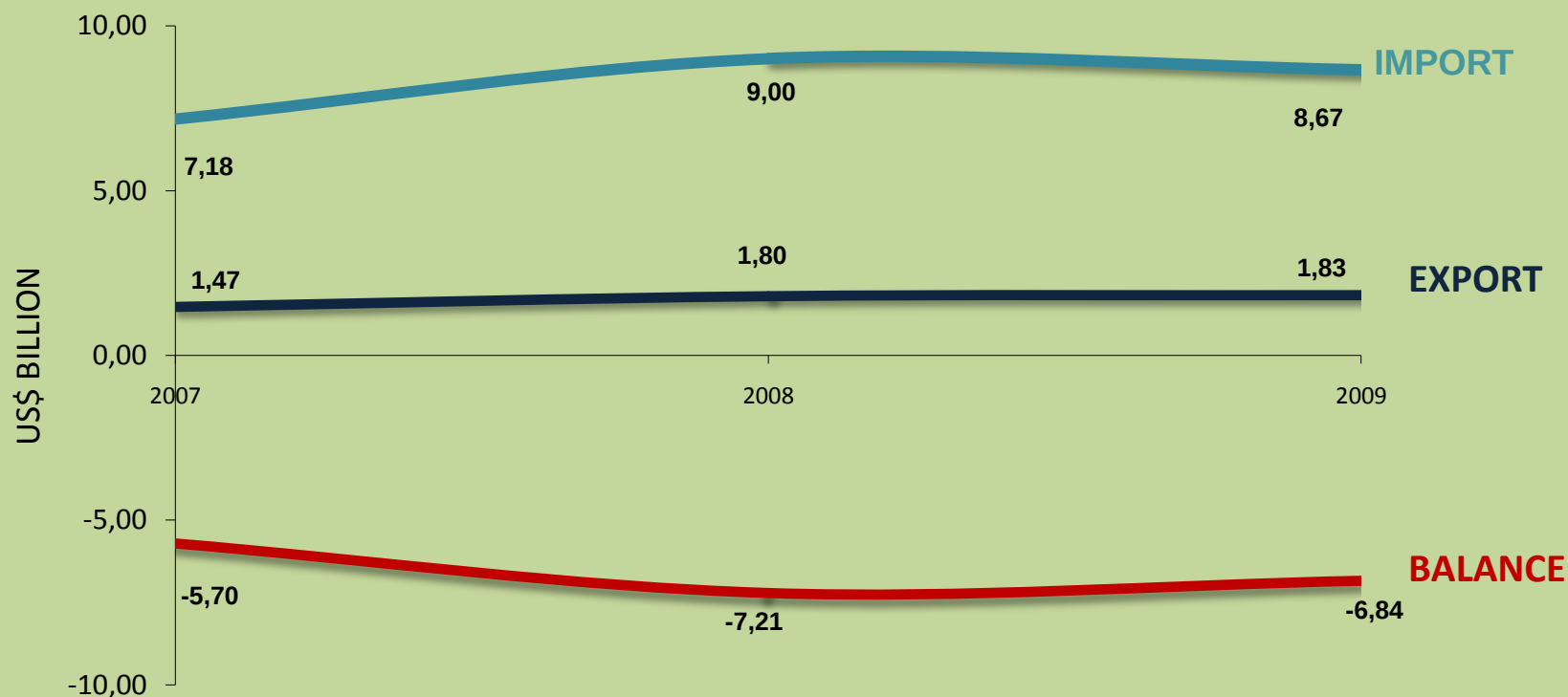
Technological services

Maintenance
Physical buildings
Technological management

Modified from Gadelha, 2004



BRAZILIAN TRADE BALANCE OF THE HEALTH SECTOR (2009)



Fonte: DECIIS/MS com base nos dados Secex e Abimo. Estimativas 2009 até setembro (cadeia farmacêutica) e agosto (equipamentos)

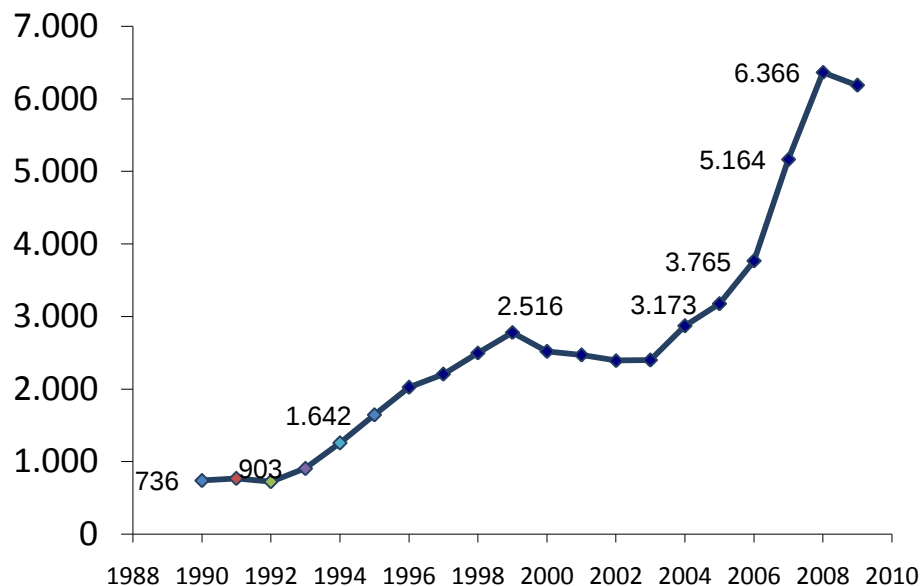


‘Health as a strategic area for Biodiversity and Ecosystems’ (UNDP)

- ✓ Need to articulate economy and health surveillance
- ✓ International relevance:
 - security; global governance; technological frontiers and economic dynamics
- ✓ Environment as an increasing determinant of health status vs the need for a better assessment of impacts of biodiversity degradation



PHARMACEUTICAL IMPORTS (US\$ million)



Vaccines, sera and blood products Imports

- US\$ 50 million in 1989
→ US\$ 1,7 billion in 2009
- Concentrated in products with high technological added-values

Exports

- US\$ 1,5 milhões em 1989
- → US\$ 38 million in 2009
- Concentrated in commodities



Considering the

1. the dissociation between research and burden of diseases (particularly concerning neglected diseases)
2. that individual health prevails over collective health
3. the knowledge produced is scarcely transformed into policies and health programs
4. the deficient structure for biotechnology
5. industrial vulnerability of the Health Productive Complex
6. the weakness of the system for scientific production assessment and
7. the benefits of the endogenous production of science as a tool for economical growth

→ *Fiocruz must contribute to overcome this technological and economical gap with R&D and production*



BRAZILIAN BIODIVERSITY AND EMERGING AND RE-EMERGING ZOOZOSIS
ECONOMICAL IMPACT OF EMERGING DISEASES

HEALTH BRC :

COLLECTIONS, BRC AND HEALTH SURVEILLANCE: THE ROLE OF FIOCRUZ

SESSION 3B: BIOLOGICAL MATERIAL FOR HEALTH CARE INNOVATION AND EPIDEMIOLOGICAL CONTROL



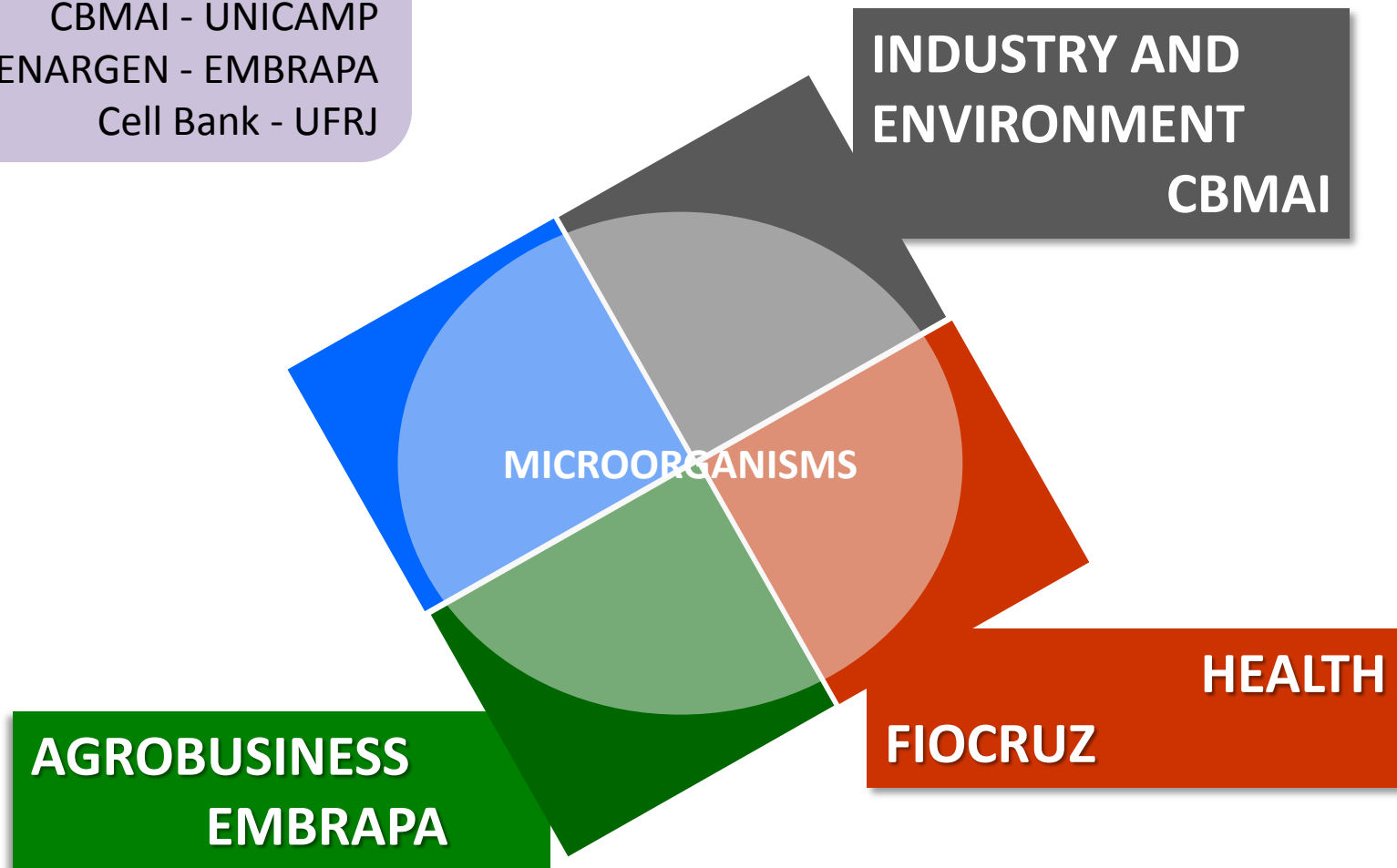
Fiocruz contribution for R&D and production

- ✓ Vaccines for the National Immunization Program, in collaboration with Instituto Butantan (SP)
- ✓ Diagnostic kits for the main infectious disease
- ✓ Anti-retrovirals and drugs for controlling and treating the main endemics (malaria, TB, schistosomiasis, leishmaniasis, etc)
- ✓ Biopharmaceuticals: interferon- α , erythropoietin
- ✓ Medicines of continual use (hypertension, diabetes)
- ➔ Reference Laboratories (compulsory notification diseases)
- ➔ Biological Collections and the **Health-BRC**



Brazilian BRC Network

CLIOC - FIOCRUZ
CBMAI - UNICAMP
CENARGEN - EMBRAPA
Cell Bank - UFRJ



Vision of the Health-BRC

To build a collection – unique in the world – of biological material related mainly to neglected diseases of Latin America in order to support scientific research, epidemiological studies, as well as the development and production of bioproducts directed to diagnosis vaccine and drugs.



Mission of the Health-BRC

To collect, preserve, indentify and catalogue, according to international standards of Quality, a representative collection of microorganisms that are relevant to epidemiology surveillance, *particularly those related to neglected diseases*, and to the *technological development of products* with significance to human Health.



1	BCCCP	WDCM921	Brazilian Culture collection of Crinipellis pernicioso
2	BCCUSP	WDCM844	Brazilian Cyanobacteria Collection - University of Sao Paulo
3	BCRJ	WDCM649	Rio de Janeiro Cell Bank (Banco de Celulas do Rio de Janeiro)
4	BMBC	WDCM910	Brazilian Marine Bacteria Collection
5	BR	WDCM364	Embrapa Agrobiologia Diazotrophic Microbial Culture Collection
6	CBAM	WDCM956	Colecao de Bacterias da Amazonia
7	CBMA	WDCM958	Colecao de Bacterias da Mata Atlantica
8	CBMAI	WDCM823	Brazilian Collection of Microorganisms from the Environment and Industry (Colecao Brasileira de Microrganismos de Ambiente e Industria)
9	CCB	WDCM713	Colecao de Culturas de Basidiomicetos
10	CCBS-IOC	WDCM947	Colecao de Culturas de Bacterias de Interesse em Saude, Bacterial Culture Collections of Health Importance
11	CCGB	WDCM574	Colecao de Culturas do Genero Bacillus e Generos Correlatos
12	CCIAL	WDCM867	Cultures Cells for Institute Adolfo Lutz
13	CCT	WDCM885	Colecao de Culturas Tropical
14	CEMM	WDCM880	CEMM - CENTRO ESPECIALIZADO EM MICOLOGIA MEDICA
15	CETESB	WDCM714	Setor de Pesquisa Tecnologica de Sistemas de Tratamento de Efluentes Domesticos
16	CFAM	WDCM957	Colecao de Fungos da Amazonia
17	CFP	WDCM951	Colecao de Fungos Patogenicos
18	CG	WDCM712	Embrapa Genetic Resources and Biotechnology Collection of Fungi of Interest to Biological Control
19	CLIOC	WDCM731	Colecao de Leishmania do Instituto Oswaldo Cruz
20	CMM	WDCM923	Culture Collection of Phytopathogenic Fungi "Prof. Maria Menezes" (Colecao de Culturas de Fungos Fitopatogenicos "Prof. Maria Menezes")
21	CMT	WDCM948	Colecao Micologica de Trichocomaceae
22	CNEN-LABPC	WDCM710	Laboratorio de Pocos de Caldas
23	CPAC	WDCM776	Cpac-Embrapa
24	CPRR	WDCM730	Laboratorio de Doenca de Chagas
25	ColTryp	WDCM949	Colecao de Trypanosoma de Mamiferos Silvestres, Domesticos e Vetores
26	DPUA	WDCM715	Departamento de Patologia/ICB
27	EMPARN	WDCM726	Empresa de Pesquisa Agropecuaria do Rio Grande do Norte
28	ESAP	WDCM294	Instituto Zimotecnico-Z
29	FTI	WDCM716	Centro de Biotecnologia e Quimica-CEBIQ
30	IAL	WDCM282	Nucleo de Colecao de Microrganismos
31	IALCEL	WDCM732	Secao de Culturas Celulares
32	IALMIC	WDCM717	Micoteca do Insituto Adolfo Lutz
33	IBSBF	WDCM110	Biological Institute Culture Collection of Phytopathogenic Bacteria
34	IEAPM	WDCM727	Instituto de Estudos do Mar "Almirante Paulo Moreira"
35	IGESALQ	WDCM902	Colecao Microorganismos
36	IMT	WDCM718	Micoteca do Instituto de Medicina Tropical de Sao Paulo
37	INCQS	WDCM575	Colecao de Microrganismos de Referencia do INCQS
38	INPA	WDCM719	Laboratorio de Micologia Medica Divisao de Microbiologia e Nutricao
39	IOC	WDCM720	Colecao de Culturas de Fungos Filamentosos
40	IOUSP	WDCM728	Marine Microalgae Culture Collection
41	IPT	WDCM721	Agrupamento de Biotecnologia, Culture Collection of Microorganisms
42	ITAL	WDCM143	Banco de Fermentos Lacticos
43	ITALSL	WDCM722	Secao de Leite e Derivados
44	ITALSM	WDCM723	Secao de Microbiologia
45	IZ	WDCM724	Departamento de
46	LBM	WDCM737	Laboratorio de B
47	LE	WDCM313	Servico de Microb
48	LGM-USP	WDCM736	Departamento de
49	MMBF	WDCM942	Micoteca Mario B
50	Micoteca IAL	WDCM869	Micoteca do Instit
51	SEMIA	WDCM443	Colecao de Cultur
52	SMIP	WDCM729	Secao de Maricult
53	SVIEC	WDCM734	Secao de Virus
54	TCC/USP	WDCM601	Trypanosomatid C
55	UCP	WDCM927	Colecao da Universidade Catolica de Pernambuco
56	UFPEDA	WDCM114	Universidade Federal de Pernambuco
57	UFRJIM	WDCM725	Departamento de Microbiologia Medica
58	UFScarCC	WDCM835	Freshater Microalgae Collection Cultures
59	URM	WDCM604	Universidade Federal de Pernambuco
60	VTB	WDCM733	Banco de Celulas Humanas e Animais Laboratorio de Patologia Celular e Molecular

Home Pages of Culture Collections in the World

Updated 26 September 2010

There are 584 culture collections in 68 countries registrated in WDCM.



► Conheça a Fiocruz

► Desenvolvimento
Tecnológico

► Pesquisa

► Produção Científica

► Grandes Áreas Temáticas

► Coleções Biológicas

► Cursos

► Comunicação e Informação

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► Produção

► Programas Sociais

► Cooperação Técnica

► Editais e Licitações

► Serviços do Portal

► Ouvidoria

► Mapa do Portal

► Expediente



V Congresso Brasileiro de Bancos de Leite Humano

I Congresso Iberoamericano de Bancos de Leite Humano

Fórum de Cooperação Internacional em Bancos de Leite Humano - ABC/Fiocruz 2010

27 a 30 de setembro de 2010 • Brasília - Brasil



DESTAQUES

ATUALIDADES

Notícias

Pesquisador

Profissional de Saúde

Estudante

**CONCURSO
FIOCRUZ
2010**

Coleções Biológicas

Banco de Imagens

Editora Fiocruz

Museu da Vida

Bibliotecas

Audiovisuais

Ouvidoria

Vacinas, reagentes e medicamentos

 **Congresso Interno
da FIOCRUZ**

**Inscrições do
concurso terminam
na sexta (24/9)**



Pagamento da taxa vai até segunda (27/9). Quem já se inscreveu e ainda não pagou também poderá fazê-lo na nova data de vencimento

**Fiocruz e Hemobrás
assinam acordo de
cooperação**

Objetivo é promover atividades conjuntas nas áreas de pesquisa, desenvolvimento tecnológico, inovação e gestão

**Eficácia de
medicamento contra
a malária é apontada**

Estudo publicado na revista científica internacional apontou que o ASMQ, produzido pela Fundação, é o melhor para o controle da doença

Arquivo de Notícias
Os últimos destaques do Portal Fiocruz



Fiojovem
Saúde e ciência para adolescentes



Microorganisms collections in Fiocruz

Bacteria Collections

(Rio de Janeiro):

- Bacteria with Health importance
(Enteropathogenic, Hospital originated, *Listeria* and *Campylobacter*)
- *Bacillus* and related genera
- Bacteria from the Atlantic Forest



(Pernambuco):

- *Yersinia*

(Amazonas)

- Bacteria from the Amazonian Region

Fungi Collections

(Rio de Janeiro)

- Fungi (IOC)
- *Trichocomaceae* (IOC)
- Reference microorganisms: Fungi domain (INCQS)
- Pathogenic Fungi (IPEC)

(Amazonas)

- Fungi from the Amazonian Region



Protozoal Collections

(Rio de Janeiro)

- *Trypanosoma* from sylvatic, domestic reservoirs (IOC)
- *Leishmania* (IOC)

(Bahia)

- Protozoal



Archae Collection

(Rio de Janeiro)





Centro de Pesquisa Leônidas e Maria Deane

collections

CBAM • Collection of Bacteria from Amazon

português

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history

services

staff

catalogue

contact



Coleção de Fungos da Amazônia - CFAM

The Collection of Bacteria from Amazon, CBAM, which is inserted in the Biological Collections from Institute Leonidas and Maria Deane, CBILMD, consists of a heritage of scientific importance. This collection is composed of bacteria from Amazon, including a total of 340 bacteria identified and preserved by the methods of mineral oil, at -20°C , and lyophilization.

Bacterial cultures that compose CBAM are from clinical isolates (human oropharynx and faeces), from bucal microbiota of animals and from environment (rivers, streams and plants). The main bacteria in the collection are: *Salmonella* spp., *Escherichia coli*, *Shigella* spp., *Neisseria meningitidis*, *Staphylococcus aureus* among others. The collection is of significant importance, since it consists of bacterial strains isolated from different substrates from the Brazilian Amazon, a region that remains poorly explored regarding its microbial diversity.

CBAM accepts the deposit of cultures isolated by researchers from several laboratories and universities of the country. CBAM also maintains a large number of type and reference cultures, used in taxonomic studies or related to tests with different substances.

CBAM is affiliated to World Federation of Culture Collection, WFCC, under registration number WDCM 956.



[code](#)
[international code](#)
[country](#)
[parasite](#)
[clinical form](#)
[ioc-z](#)
[hiv](#)
[molecular characteristics](#)

code	international code	country	host	parasite	clinical form	ioc-z	hiv
IOCL 0051	MHOM/BR/1976/JOF	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) major</i>	CL	Zimodema: IOC/Z:03 [DOC:Alelos_MLEE]	
IOCL 0059	MHOM/BR/1973/M2269	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) amazonensis</i>	CL		
IOCL 0067	MDID/BR/1977/Conchas	BR	<i>Didelphis marsupialis</i>	<i>Leishmania (Leishmania) forattinii</i>	VL	Zimodema: IOC/Z:11 [DOC:Alelos_MLEE]	
IOCL 0069	MHOM/BR/1981/DONIZETE	BR	<i>Homo sapiens</i>	<i>Leishmania (Viannia) braziliensis</i>	CL	Zimodema: IOC/Z:27 [DOC:Alelos_MLEE]	
IOCL 0091	MHOM/BR/1975/M2903	BR	<i>Homo sapiens</i>	<i>Leishmania (Viannia) braziliensis</i>	CL		
IOCL 0106	MHOM/BR/1982/HELENO	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) sp.</i>	CL		
IOCL 0107	MHOM/BR/1971/MT	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) sp.</i>	CL	Zimodema: IOC/Z:12 [DOC:Alelos_MLEE]	
IOCL 0108	MHOM/BR/1975/M4147	BR	<i>Homo sapiens</i>	<i>Leishmania (Viannia) guyanensis</i>	CL		
IOCL 0184	MNYC/BZ/1962/M379	BZ	<i>Nyctomys sp.</i>	<i>Leishmania (Leishmania) mexicana</i>	CL		
IOCL 0185	MHOM/BR/1977/LTB0016	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) amazonensis</i>	CL	Zimodema: IOC/Z:7 [DOC:Alelos_MLEE]	
IOCL 0262	MHOM/BR/1983/DAY	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) amazonensis</i>	DCL	Zimodema: IOC/Z:7 [DOC:Alelos_MLEE]	
IOCL 0309	MHOM/BR/1983/JHS	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) amazonensis</i>	CL	Zimodema: IOC/Z:7 [DOC:Alelos_MLEE]	
IOCL 0321	MHOM/BR/1983/WPL	BR	<i>Homo sapiens</i>	<i>Leishmania (Leishmania) sp.</i>	CL		
IOCL 0329	MCAN/BR/1984/17.206	BR	<i>Canis familiaris</i>	<i>Leishmania (Leishmania) chagasi</i>	VL	Zimodema: IOC/Z:1 [DOC:Alelos_MLEE]	
IOCL 0353	MHOM/BR/1984/H-32	BR	<i>Homo sapiens</i>	<i>Leishmania (Viannia) braziliensis</i>	CL		

« 1 2 3 4 5 6 7 8 9 10 ... »



Management of collection information

CLIOC elisa cupolillo preferências SAIR

IOCL 3173
Leishmania (Leishmania) chagasi

TAXA LINHAGENS INSTITUIÇÕES PESSOAS DOCUMENTOS REFERÊNCIAS PRESERVAÇÃO DISTRIBUIÇÃO

GERAL COLETA ISOLAMENTO IDENTIFICAÇÃO DEPÓSITO CULTIVO CARACTERÍSTICAS PROPRIEDADES CQ ESTOQUE SEGURANÇA

divisão número código código de origem status
DEFAULT 3173 IOCL 3173 LILICA II Ativo

taxon tipo ogm
[DIC] Leishmania (Leishmania) chagasi Não

complemento taxonômico

histórico
LPL → CLIOC

códigos em outras coleções

comentários
OE: 053/2010

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filtro: ok

código	taxon	código de origem	tipo
OE 2010075	Leishmania sp.	APNF	-
OE 2010020	Leishmania sp.	JCB	-
OE 2010019	Leishmania sp.	MFL	-
OE 2010018	Leishmania sp.	JFL	-
OE 2010015	Leishmania sp.	L. VAL	-
OE 2010014	Leishmania sp.	RRC078	-
OE 2010013	Leishmania sp.	RRC048	-
OE 2010012	Leishmania sp.	RR087	-
OE 2010011	Leishmania sp.	RR379	-
OE 2010010	Leishmania sp.	RR377	-
OE 2010009	Leishmania sp.	RR374	-
OE 2010008	Leishmania sp.	RR370	-
OE 2010007	Leishmania sp.	RR368	-
OE 2010006	Leishmania sp.	RR344	-
OE 2010005	Leishmania sp.	RR306	-
OE 2010004	Leishmania sp.	JC	-
OE 2010003	Leishmania sp.	L. BONI	-
OE 2010002	Leishmania sp.	MS	-
OE 2010001	Leishmania (Leishmania) amazonensis	LTB0016	-
IOCL 3173	Leishmania (Leishmania) chagasi	LILICA II	-
IOCL 3172	Leishmania (Leishmania) chagasi	LILICA I	-
IOCL 3171	Leishmania (Leishmania) chagasi	MAIDO II	-
IOCL 3170	Leishmania (Leishmania) chagasi	MAIDO I	-

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- Lote

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GERAL SEGURANÇA

data lote

responsável método utilizado
--- Criopreservação

dados de processamento

B I U x x' Ω

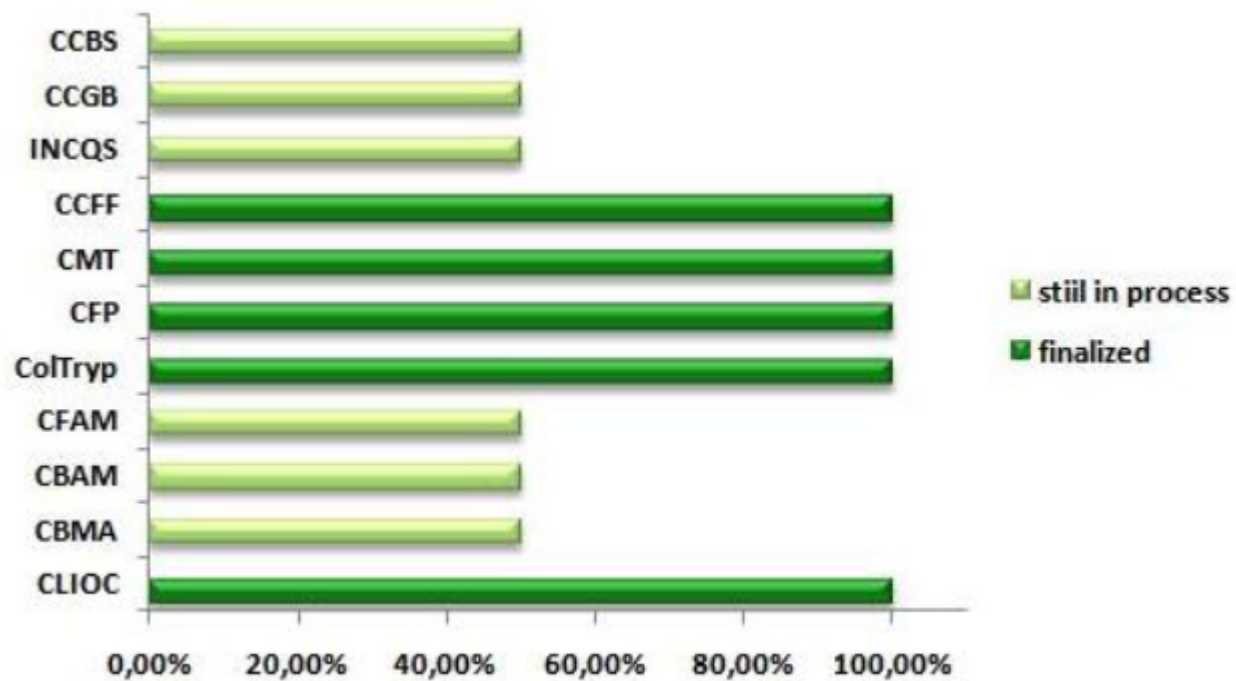
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Entrada no estoque

contêiner posição
LRNTL01 Canister 1 Box 1

	A	B	C	D	E	F	G	H	I	J
1	●		●	●	●	●	●	●	●	●
2	●	●	●	●	●	●		●	●	●
3	●						●		●	●
4	●	●	●		●	●		●	●	●
5	●		●	●	●	●		●	●	●
6	●	●	●	●	●	●	●	●	●	●
7	●	●	●	●	●	●		●	●	●
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9		●		●	●		●	●	●	●
10	●		●	●	●			●	●	●



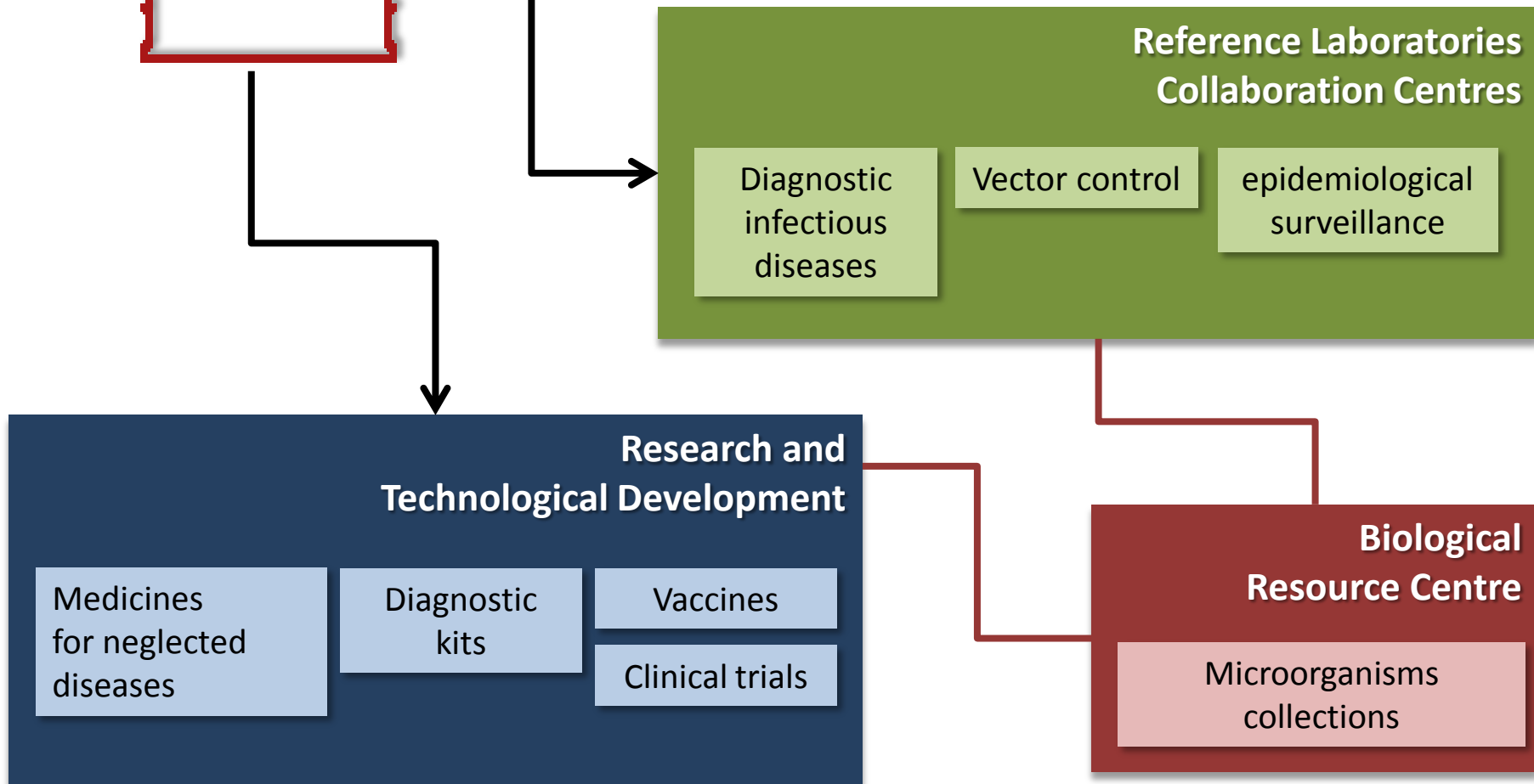
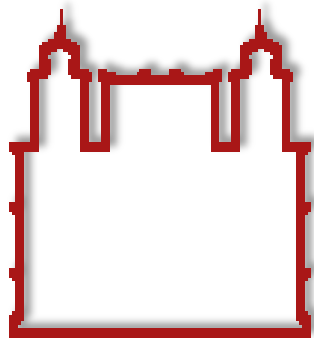




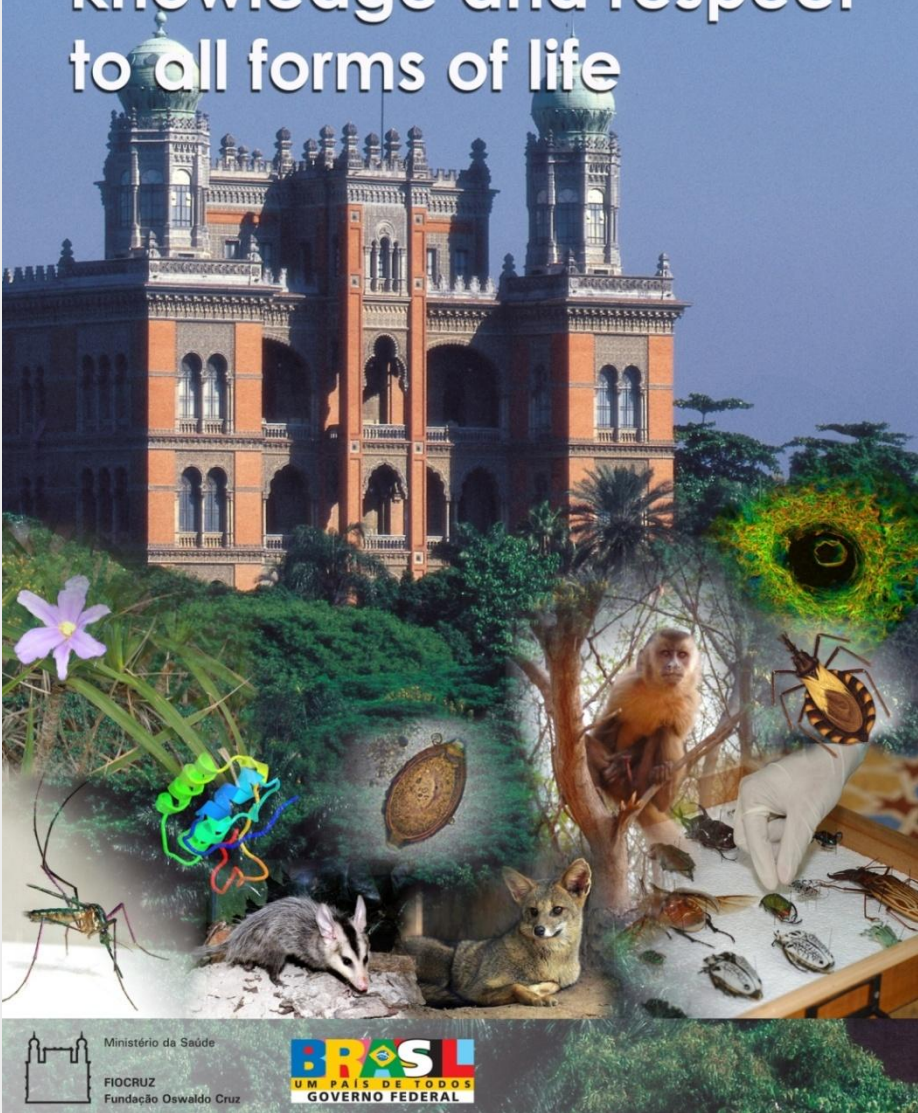
SECRETARIA DE VIGILÂNCIA EM SAÚDE
 PORTARIA Nº 70, DE 23 DE DEZEMBRO DE 2004 (*)
 SECRETARIA DE VIGILÂNCIA EM SAÚDE
 PORTARIA Nº 97, DE 23 DE OUTUBRO DE 2008(*)

NATIONAL	FIOCRUZ
ANTHRAX	RJ
*DENGUE	RJ
CHAGAS DISEASE	RJ, MG, PE
ENTEROBACTERIA	RJ
SCHISTOSOMIASIS	RJ, MG
FILARIASIS	RJ, PE
INFLUENZA	RJ
VIRAL HEPATITIS	RJ, BA
HYDATIDOSIS	RJ
LEISHMANIASIS	RJ, MG, PE, BA
LEPTOSPIROSIS	RJ
SYSTEMIC MYCOSIS	RJ
PLAGUE	PE
POLIOMIELITIS & OTHER ENTEROVIRUSES	RJ
RICKETTSIOSIS	RJ
TUBERCULOSIS	RJ
EXANTEMATIC VIRAL DISEASES	RJ
AIDS	RJ
HANSENIASIS	RJ
SARS	RJ





Over 100 years building knowledge and respect to all forms of life



Thank you!

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