

Declaration form on Nothing to Declare or Nothing New to Declare for use in the information exchange

Measure	Nothing to declare	Nothing new to declare	Year of last declaration if nothing new to declare
A, part 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A, part 2 (i)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A, part 2 (ii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A, part 2 (iii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="2012"/>
F	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="1992"/>
G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Please mark the appropriate box(es) for each measure with a tick, and fill in the year of last declaration in the last column where applicable.)

Date: 15 April 2016

State Party to the Convention: GERMANY

Date of ratification/accession to the Convention: 07 April 1983

National point of contact: OR12-rl@diplo.de

Form A, part 1

Exchange of data on research centres and laboratories

1. Name(s) of facility:

Bernhard-Nocht-Institut für Tropenmedizin

2. Responsible public or private organization or company:

Free and Hanseatic City of Hamburg

3. Location and postal address:

Bernhard-Nocht-Straße 74

D-20359 Hamburg

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence:

- Free and Hanseatic City of Hamburg
- Federal Ministry of Health
- European Commission
- German Research Foundation

5. Number of maximum containment units within the research centre and/or laboratory, with the indication of their respective size (m²):

Two maximum containment units (biosafety level 4), approx. 150 m²

6. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate:

Diagnosis of and research on viruses causing hemorrhagic fevers (Lassa, Ebola, Marburg, Crimean-Congo hemorrhagic fever). Research includes basic research on virus replication, immunology, and pathogenesis, as well as applied research on therapy and prophylaxis.

Form A, part 1

Exchange of data on research centres and laboratories

1. Name(s) of facility:

Friedrich-Loeffler-Institut (Federal Research Institute for Animal Health)

2. Responsible public or private organization or company:

Federal Ministry of Food and Agriculture

3. Location and postal address:

Südufer 10

D-17493 Greifswald – Insel Riems

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence:

- Federal Ministry of Food and Agriculture

5. Number of maximum containment units within the research centre and/or laboratory, with the indication of their respective size (m²):

Three maximum containment units, approx. 190 m²,

(FMD laboratory with effluent treatment, negative pressure and HEPA filters to protect the environment according to FAO standards, no equipment for the protection of staff, therefore unsuitable for work with human pathogens)

6. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate:

Diagnosis of and research on animal diseases

Veterinary medicine: mechanisms of pathogenesis, vaccines, diagnosis of Foot and mouth disease, Bovine spongiform encephalopathy, African swine fever, Classical swine fever and other animal diseases caused by viruses

Form A, part 1

Exchange of data on research centres and laboratories

1. Name(s) of facility:

Institut für Virologie der Philipps Universität Marburg

2. Responsible public or private organization or company:

Philipps-University Marburg

3. Location and postal address:

Hans-Meerwein-Strasse 3

D-35043 Marburg

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence:

- State of Hessen
- German Research Foundation (Deutsche Forschungsgemeinschaft)
- Federal Ministry of Education and Research
- European Union

5. Number of maximum containment units within the research centre and/or laboratory, with the indication of their respective size (m²):

Two maximum containment units, 110 m² each

6. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate:

Basic research on Marburg virus, Ebola virus, Lassa virus, Nipah Virus, SARS-Corona Virus, Junin Virus and Crimean-Congo Hemorrhagic Fever Virus. Diagnostic services in surveillance of Class 4 - viruses and smallpox virus. Development and characterization of vaccines.

Form A, part 2(i)

National Biological Defence Research and Development Program Declaration

Are there any national programmes to conduct biological defence research and development within the territory of the State Party, under its jurisdiction or control anywhere? Activities of such programmes would include prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

YES

If the answer is YES, complete Form A, part 2 (ii) which will provide a description of each programme.

Form A, part 2 (ii)

National biological defence research and development programmes

Description

1. State the objectives and funding of each programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

Federal Ministry of Health:

The biological defence research and development activities of the Federal Ministry of Health are exclusively conducted at the Centre for Biological Threats and Special Pathogens (Zentrum für Biologische Gefahren und Spezielle Pathogene, ZBS) of the Robert Koch Institute (RKI).

The Robert Koch Institute (RKI) is the government's central scientific institution in the field of biomedicine. It is one of the most important bodies for the safeguarding of public health in Germany. Its tasks are:

- Identification, surveillance and prevention of diseases, especially infectious diseases;
- Monitoring and analysing long-term public health trends in Germany;
- Epidemiological and medical analyses and evaluation of highly pathogenic, highly contagious diseases which are of great significance for the public;
- Providing a scientific basis for health-related political decision making;
- Informing and advising political decision makers, the scientific sector and the general public;
- Executive tasks defined by special laws, in particular with regard to protection from infection, legislation on stem cell research, and attacks using biological agents;
- Federal health reporting.

The Centre for Biological Threats and Special Pathogens (Zentrum für Biologische Gefahren und Spezielle Pathogene, ZBS) has the mission (1) to identify unusual biological events with highly pathogenic agents that might be used with bioterrorist intent. (2) In addition, ZBS assesses the health implications for the general public and (3) works on preparedness and response for such incidents. This also includes informing decision-makers and professionals on incidents and to advise and support them on measures to be taken accordingly. In summary, in managing biological incidents, the centre's tasks include identification, preparedness, information, and response. The centre's work is not limited exclusively to the identification, assessment and handling of possible bioterrorist attacks. Rather the skills already acquired and those to be developed are also used for the investigation of natural outbreaks or those caused by accidents involving special and highly pathogenic agents and toxins.

Federal Ministry of Defence:

The R&D activities of the national program include: prophylaxis, diagnostic techniques, sampling and detection techniques, toxinology, decontamination, and

physical protection. Summaries and objectives of all research and development projects in the field of CBRN Medical Defence are accessible via Internet <http://www.sanitaetsdienst-bundeswehr.de>.

2. State the total funding for each programme and its source.

Federal Ministry of Health:

The total funding for personnel, consumable items and equipment for ZBS in 2015 was approximately 8.9 million EURO.

Federal Ministry of Defence:

The total funding in 2014 was approximately 9.1 million EURO.

3. Are aspects of these programmes conducted under contract with industry, academic institutions, or in other non-defence facilities?

Federal Ministry of Health:

No (Less than 1 per cent of the budget for biodefence research and development activities is expended in contracted facilities. Contractors address subsidiary aspects of the activities only.)

Federal Ministry of Defence:

Yes

4. If yes, what proportion of the total funds for each programme is expended in these contracted or other facilities?

Federal Ministry of Health:

n.a.

Federal Ministry of Defence:

Approx. 7.0 percent

5. Summarize the objectives and research areas of each programme performed by contractors and in other facilities with the funds identified under paragraph 4.

Federal Ministry of Health:

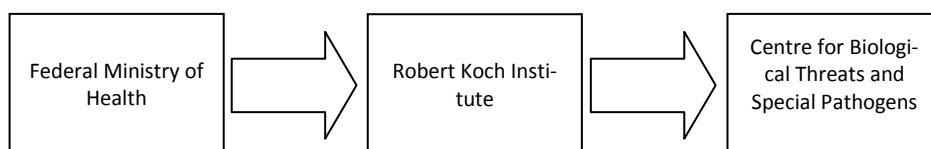
n.a.

Federal Ministry of Defence:

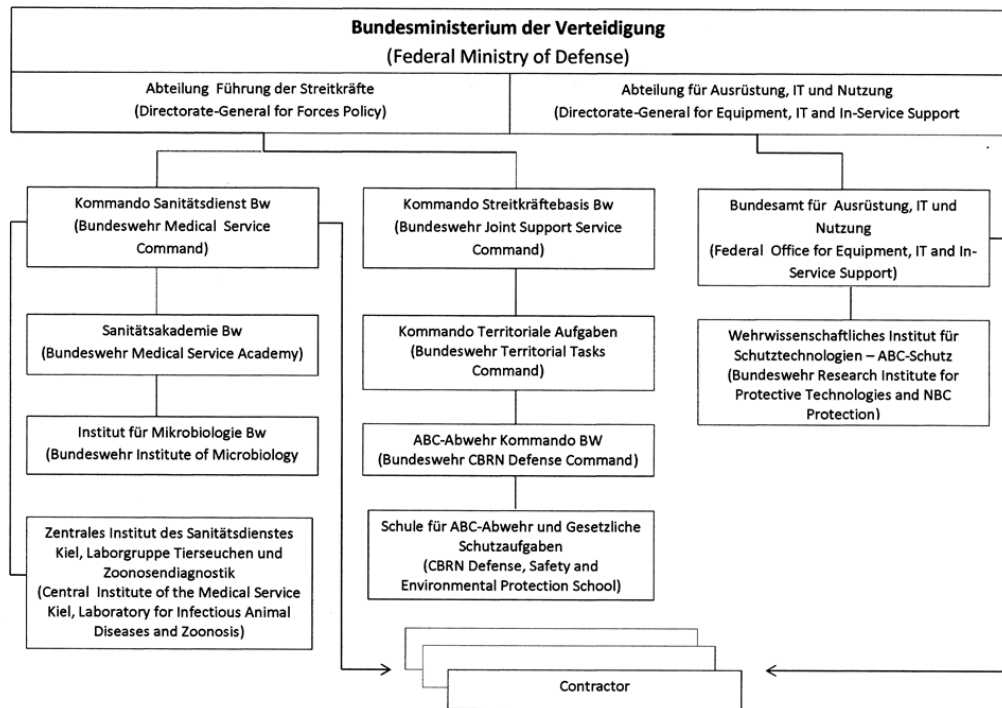
The objective of the contracted activities is to provide pertinent expertise and hardware to the Federal Ministry of Defence for the improvement of B-defence capabilities. The research areas are the same as mentioned above under #1.

6. Provide a diagram of the organizational structure of each programme and the reporting relationships (include individual facilities participating in the programme).

Federal Ministry of Health:



Federal Ministry of Defence:



7. Provide a declaration in accordance with Form A, part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to each national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.

Federal Ministry of Health:

Form A, part 2 (iii) is attached for the Centre for Biological Threats and Special Pathogens at the Robert Koch Institute.

Federal Ministry of Defence:

4 Forms A, part 2(iii) are attached.

Form A, part 2 (iii)

National biological defence research and development programmes

Facilities

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. What is the name of the facility?

Institut für Mikrobiologie der Bundeswehr (Bundeswehr Institute of Microbiology)

2. Where is it located?

D-80937 München, Neuherbergstraße 11
(48°12` north, 11°34` east)

3. Floor area of laboratory areas by containment level:

BL 2	1258 m ²
BL 3	67 m ²
BL 4	-- m ²
Total Laboratory Floor Area	1325 m ²

4. The organisational structure of the facility:

- I) Total number of personnel: 65
- II) Division of personnel:
- | | |
|----------|----|
| Military | 41 |
| Civilian | 24 |
- III) Division of personnel by category:
- | | |
|--------------------------|----|
| Scientists | 20 |
| Technicians | 39 |
| Admin. and support staff | 6 |
- IV) Represented scientific disciplines:
Medicine, veterinary medicine, microbiology, virology, bacteriology, immunology, molecular biology, epidemiology, laboratory medicine
- V) Contractor staff: 16
- VI) Source of funding: Federal Ministry of Defence
- VII) Funding levels for the following program areas:
The funding for personnel, consumable items and equipment in 2015 was approx. 5.5 million EURO.
- | | |
|------------------------|------|
| Research | 40 % |
| Development | 25 % |
| Test and Evaluation | 25 % |
| Education and Training | 10 % |
- VIII) Publication policy:
Results are published in scientific journals as well as in reports to the Federal Ministry of Defence and will be presented in national and international scientific meetings.
- IX) Lists of public available papers and reports resulting from the work during the previous 12

month:

1. Al-Deeb MA, **Frangoulidis D**, **Walter MC**, Kömpf D, Fischer SF, Petney T, Muzaffar SB. *Coxiella*-like endosymbiont in argasid ticks (*Ornithodoros muesebecki*) from a Socotra Cormorant colony in Umm Al Quwain, United Arab Emirates. *Ticks Tick Borne Dis.* 2016 Feb;**7**(1):166-71.
2. **Antwerpen MH**, **Georgi E**, **Zoeller L**, **Woelfel R**, **Stoecker K**, Scheid P. (2015) Whole-genome sequencing of a pandoravirus isolated from keratitis-inducing *acanthamoeba*. *Genome Announc.* 2015 Mar 26;**3**(2). pii: e00136-15. doi: 10.1128/genomeA.00136-15.
3. **Antwerpen MH**, Prior K, Mellmann A, Höppner S, **Splettstoesser WD**, Harmsen D. (2015). Rapid High Resolution Genotyping of *Francisella tularensis* by Whole Genome Sequence Comparison of Annotated Genes ("MLST+"). *PLoS One.* 2015 Apr 9;**10**(4):e0123298. doi: 10.1371/journal.pone.0123298.
4. Arnold M, Wibberg D, Blom J, Schatschneider S, Winkler A, Kutter Y, Rückert C, Albersmeier A, Albaum S, Goesmann A, **Zange S**, Heesemann J, Pühler A, Hogardt M, Vorhölter FJ. *Genome Announc.* 2015 Jul **2**;3(4).
5. **Bleichert P**, **Meyer H** und **G Grass** (2015). Inaktivierung von Bakterien und Viren durch metallische Kupferflächen. *Hyg Med* **40**; 192-198
6. Boden K, Wolf K, Hermann B, **Frangoulidis D**. First isolation of *Coxiella burnetii* from clinical material by cell-free medium (ACCM2). *Eur J Clin Microbiol Infect Dis.* 2015 May;**34**(5):1017-22.
7. **Braun P**, **Grass G**, Aceti A, Serrecchia L, Affuso A, Marino L, Grimaldi S, Pagano S, **Hanczaruk M**, **Georgi E**, **Northoff B**, Schöler A, Schloter M, **Antwerpen M**, Fasanella A. (2015) Microevolution of Anthrax from a Young Ancestor (M.A.Y.A.) Suggests a Soil-Borne Life Cycle of *Bacillus anthracis*. *PLoS One.* 2015 Aug 12;**10**(8):e0135346.
8. Brissos V, Ferreira M, **Grass G**, and Martins LO (2015) Turning a hyperthermostable metallo-oxidase into a laccase by directed evolution. *ACS Catal.*, 2015, **5** (8), 4932–4941.
9. Caluwaerts S, Fautsch T, Lagrou D, Moreau M, Camara AM, Günther S, Di Caro A, Borremans B, Koundouno FR, Bore JA, Logue CH, Richter M, **Wölfel R**, Kuisma E, Kurth A, Thomas S, Burkhardt G, Erland E, Lionetto F, Weber PL, de la Rosa O, Macpherson H, Van Herp M. (2015) Dilemmas in managing pregnant women with Ebola: 2 case reports. *Clin Infect Dis.* 2015 Dec 17.
10. Carroll MW, Matthews DA, Hiscox JA, Elmore MJ, Pollakis G, Rambaut A, Hewson R, García-Dorival I, Bore JA, Koundouno R, Abdellati S, Afrough B, Aiyepada J, Akhilomen P, Asogun D, Atkinson B, Badusche M, Bah A, Bate S, Baumann J, Becker D, Becker-Ziaja B, Bocquin A, Borremans B, Bosworth A, Boettcher JP, Cannas A, Carletti F, Castilletti C, Clark S, Colavita F, Diederich S, Donatus A, Duraffour S, Ehichioya D, Ellerbrok H, Fenandez-Garcia MD, Fizet A, **Fleischmann E**, Gryseels S, Hermelink A, Hinzmann J, Hopf-Guevara U, Ighodalo Y, Jameson L, Kelterbaum A, Kis Z, Kloth S, Kohl C, Korva M, Kraus A, Kuisma E, Kurth A, Liedigk B, Logue CH, Lüdtke A, Maes P, McCowen J, Mély S, Mertens M, Meschi S, Meyer B, Michel J, **Molkenthin P**, Muñoz-Fontela C, Muth D, Newman EN, Ngabo D, Oesterreich L, Okosun J, Olorok T, Omiunu R, Omomoh E, Pallasch E, Pályi B, Portmann J, Pottage T, Pratt C, Priesnitz S, Quartu S, Rappe J, Repits J, Richter M, Rudolf M, Sachse A, Schmidt KM, Schudt G, Strecker T, Thom R, Thomas S, Tobin E, Tolley H, Trautner J, Vermoesen T, Vitoriano I, **Wagner M**, Wolff S, Yue C, Capobianchi MR, Kretschmer B, Hall Y, Kenny JG, Rickett NY, Dudas G, Coltart CE, Kerber R, Steer D, Wright C, Senyah F, Keita S,

- Drury P, Diallo B, de Clerck H, Van Herp M, Sprecher A, Traore A, Diakite M, Konde MK, Koivogui L, Magassouba N, Avšič-Županc T, Nitsche A, Strasser M, Ippolito G, Becker S, **Stoecker K**, Gabriel M, Raoul H, Di Caro A, **Wölfel R**, Formenty P, Günther S. (2015) Temporal and spatial analysis of the 2014-2015 Ebola virus outbreak in West Africa. *Nature*. 2015 Jun 17. doi: 10.1038/nature14594.
11. **Chitimia-Dobler L**. Spatial distribution of *Dermacentor reticulatus* in Romania. *Vet Parasitol* 2015, **214** (1-2), 219-223.
 12. Diers J, Kouriba B, Ladan Fofana L, **Fleischmann E**, **Starke M**, Diallo S, Babin FX von Bonin J **Wölfel R** (2015): Laboratoires mobiles et leur contribution dans l'endiguement de pathologies émergentes en Afrique subsaharienne illustrée par l'exemple de la maladie à virus Ebola in *Médecine et Santé Tropicales* 2015 ; 00 : 1-5
 13. Duraffour S, Lorenzo MM, **Zoeller G**, Topalis D, Grosenbach D, Hruby DE, Andrei G, Blasco R, **Meyer H** and R Snoeck (2015). ST-246 is a key antiviral to inhibit the viral F13L phospholipase, one of the essential proteins for orthopoxvirus wrapping. *J Antimicrob Chemother* doi:10.1093/jac/dku545
 14. Fasanella A, **Braun P**, **Grass G**, **Hanczaruk M**, Aceti A, Serrecchia L, Leonzio G, Tolve F, **Georgi E**, **Antwerpen MH**. (2015) Genome Sequence of *Bacillus anthracis* Isolated from an Anthrax Burial Site in Pollino National Park, Basilicata Region (Southern Italy). *Genome Announc*. 2015 Mar 19;**3**(2). pii: e00141-15. doi: 10.1128/genomeA.00141-15.
 15. Grahner A, Müller U, **von Buttler H**, Treudler R, Alber G. Analysis of asthma patients for cryptococcal seroreactivity in an urban German area. *Med Mycol*. 2015, **53**(6), 576-86.
 16. **Grass G**, Ahrens B, Schleenbecker U, **Dobrzykowski L**, **Wagner M**, **Krüger C**, **Wölfel R** (2015) Simple, scalable, and sensitive protocol for retrieving *Bacillus anthracis* (and other live bacteria) from heroin. *Forens Sci Int*. 2015 doi:10.1016/j.forsciint.2015.11.017
 17. **Grass G**, **Hanczaruk M** and **Antwerpen MH** (2015) Genome sequence of *Bacillus anthracis* Larissa associated with a case of cutaneous anthrax in Greece. *Genome Announc*. 2015 Dec, **3**(4)
 18. **Grass G**, Hans M, Mücklich F, Solioz M, Rensing C. (2015) Massive Kupferwerkstoffe in der Hygiene und Infektionsprävention- Bulk copper materials for hygiene and infection prevention. *Hyg Med* 2015; **40**-11, 458-463.
 19. Hammerl JA, Ulrich RG, Imholt C, **Scholz HC**, Jacob J, Kratzmann N, Nöckler K, Al Dahouk S. (2015). Molecular Survey on Brucellosis in Rodents and Shrews - Natural Reservoirs of Novel *Brucella* Species in Germany? *Transbound Emerg Dis*. 2015 Sep 23. doi: 10.1111/tbed.12425.
 20. Heinrich N, Dill T, **Dobler G**, Clowes P, Kroidl I, Starke M, Ntinginya NE, Maboko L, Löscher T, Hoelscher M, Saathoff E (2015). High Seroprevalence for Spotted Fever Group Rickettsiae, Is Associated with Higher Temperatures and Rural Environment in Mbeya Region, South-western Tanzania. *PLoS Negl Trop Dis* DOI:10.1371/journal.pntd.0003626
 21. Huber K, **Thoma B**, Löscher T, Wieser A. Primary skin melioidosis in a returning traveler. (2015) *Infection*. 2015 Feb 6.
 22. International working Group on tick-borne encephalitis. Tick-borne encephalitis as a notifiable disease – status quo and the way forward. Report of the 17th annual meeting of the International Scientific Working Group on Tick-Borne Encephalitis (ISW-TBE). *Ticks Tick Borne Dis*

2015, **6**(5), 545-548.

23. Ippolito G, Lanini S, Brouqui P, Di Caro A, Vairo F, Abdulla S, Fusco FM, Krishna S, Capobianchi MR, Kyobe-Bosa H, Lewis DJ, Puro V, **Wölfel R**, Avsic-Zupanc T, Dar O, Mwaba P, Bates M, Heymann D, Zumla A. (2015) Ebola: missed opportunities for Europe-Africa research. *Lancet Infect Dis.* 2015 Nov;**15**(11):1254-5.
24. Jurke A, Bannert N, Brehm K, Fingerle V, Kempf VA, Kömpf D, Lunemann M, Mayer-Scholl A, Niedrig M, Nöckler K, **Scholz H**, **Spletstoesser W**, Tappe D, Fischer SF. (2015). Serological survey of Bartonella spp., Borrelia burgdorferi, Brucella spp., Coxiella burnetii, Francisella tularensis, Leptospira spp., Echinococcus, Hanta-, TBE- and XMR-virus infection in employees of two forestry enterprises in North Rhine-Westphalia, Germany, 2011-2013. *Int J Med Microbiol.* 2015 Oct;**305**(7):652-62. doi: 10.1016/j.ijmm.2015.08.015.
25. Katoski SE, **Meyer H**, and **Ibrahim S** (2015). An approach for identification of unknown viruses using sequencing-by-hybridization: Identification of Unknown Viruses Using SBH. *J. Med. Virolol.* 05/2015; DOI:10.1002/jmv.24196
26. Keim P, Grunow R, ViPond R, **Grass G**, Hoffmaster A, Birdsell D, Klee SR, Pullan S, **Antwerpen MH**, Bayer BN, Latham J, Wiggins K, Hepp C, Pearson T, Brooks T, Sahl J and Wagner D. (2015) Whole Genome Analysis of Injectional Anthrax Identifies Two Disease Clusters Spanning more than 13 Years. *EBioMedicine*, Vol. **2**, Issue 11, p1613–1618
27. Kuley R, Smith HE, **Frangoulidis D**, Smits MA, Jan Roest HI, Bossers A (2015). Cell-free propagation of *Coxiella burnetii* does not affect its relative virulence. *PLoS One.* 2015 Mar **20**;10(3):e0121661.
28. Lasch P, Wahab T, Weil S, Pályi B, Tomaso H, **Zange S**, Granerud BK, Drevinek M, Kokotovic B, Wittwer M, Pflüger V, Di Caro A, Stämmler M, Grunow R, Jacob D. (2015) Identification of Highly Pathogenic Microorganisms using MALDI-TOF Mass Spectrometry - Results of an Inter-Laboratory Ring Trial. *J Clin Microbiol.* 2015 Jun **10**. pii: JCM.00813-15.
29. Maksyutov RA, GavriloVA EV, **Meyer H** and SN Shchelkunov (2015). Real-time PCR assay for specific detection of cowpox virus. *Journal of Virological Methods* **211**; 8-11
30. Moreau, M, Spencer C, Gozalbes JG, Colebunders R, Lefevre A, Gryseels S, Borremans B, Gunther S, Becker D, Bore JA, Koundouno FR, Di Caro A, **Wölfel R**, Decroo T, Van Herp M, Peetermans L, Camara A. (2015) Lactating mothers infected with Ebola virus: EBOV RT-PCR of blood only may be insufficient. *Euro Surveill*, 2015. **20**(3).
31. Morger J, Råberg L, Hille SN, Helsen S, Štefka J, Al-Sabi MNS, Kapel CMO, Mappes T, **Essbauer S**, Ulrich RG, Bartolommei P, Mortelliti A, Balčiauskas L, van den Brink NW, Rémy A, Bajer A, CheprakovM, Korva M, García-Pérez AL, Biek R, Withenshaw S, Tschirren B (2015). Distinct haplotype structure at the innate immune receptor Toll-like receptor 2 (TLR2) across bank vole populations and lineages in Europe. *Biological Journal of the Linnean Society* **116** (1); 124-133.
32. Parejo SH, Martinez-Carrasco C, Diaz JI, **Chitimia L**, Ortiz J, Mayo E, Ybanez RR. Parasitic fauna of a yellow-legged gull colony in the island of Esombreras (South-eastern Mediterranean) in close proximity to a landfill site: potential effects on cohabitating species. *Acta Parasitol* 2015, **60**(2), 290-297.
33. Perez-Cutillas P, Goyena E, **Chitimia L**, De la Rua P, Bernal LJ, Fisa R, Riera C, Iborra A, Murcia L, Segovia M, Berriuta E. Spatial distribution of human asymptomatic Leishmania infantum infection in southeast Spain: study of environmental, demographic and social risk fac-

tors. Acta Trop 2015, **146**, 127-134.

34. Richard V, **Riehm JM**, Herindrainy P, Soanandrasana R, Ratsitoharina M, Rakotomanana F, Andrianalimanana S, **Scholz HC**, Rajerison M. (2015) Pneumonic plague outbreak, Northern Madagascar, 2011. *Emerg Infect* **21**(1):8-15.
 35. **Riehm JM**, **Projahn M**, Vogler AJ, Rajerison M, Andersen G, Hall CM, Zimmermann T, Soanandrasana R, Andrianaivoarimanana V, Straubinger RK, Nottingham R, Keim P, Wagner DM, **Scholz HC**. (2015). Diverse Genotypes of *Yersinia pestis* Caused Plague in Madagascar in 2007. *PLoS Negl Trop Dis*. **12**;9(6):e0003844
 36. Schirmer L, **Wölfel S**, **Georgi E**, Ploner M, Bauer B, Hemmer B.(2015) Extensive Recruitment of Plasma Blasts to the Cerebrospinal Fluid in Toscana Virus Encephalitis. *Open Forum Infect Dis*. 2015 Sep 1;2(3):ofv124. doi: 10.1093/ofid/ofv124.
5. Brief description of the biological defence work carried out at the facility, including types of micro-organisms and/or toxins studied, as well as outdoor studies of biological aerosols:
- a. Research, development and evaluation of approaches for the rapid detection, identification and differentiation and typing of Orthopoxviruses, Alpha-, Flavi-, Bunya- and Filoviruses as well as *Coxiella*, *Burkholderia*, *Yersinia*, *Brucella*, *Bacillus* and *Francisella* spp. using state of the art techniques
 - b. Establishment of sequence data banks and tools for forensic typing
 - c. Research, development and evaluation of immunodiagnosics of relevant agents and toxins
 - d. Studies of the epidemiology, immunopathogenesis and immune response against *Francisella tularensis*, *Bacillus* spp., *Burkholderia* spp., *Brucella* spp., *Yersinia* spp., and Flaviviruses

The current program covers pathogen R I, R II and R III organisms.

No outdoor studies of biological aerosols have been conducted.

Additional Information

Medical Biodefence Conference 2016

Arranging organization	Bundeswehr Institute of Microbiology
Time	26 – 29 April 2016
Place	Munich
Main subjects	<ol style="list-style-type: none">1. Bioforensics2. Diagnostics and therapeutics3. Epidemiology and Surveillance4. Outbreak investigation and management of highly contagious patients5. Objectives and results of the German biological medical defence research and development program
Conditions for participation	Experts named by States Parties
Point of contact for further information, registration etc.	Col Prof. Dr. Zöller Bundeswehr Institute of Microbiology D-80937 München, Neuherbergstr. 11 Phone: +49-89-992692-3981 Fax: +49-89-992692-3983 e-mail: institutfuermikrobiologie@bundeswehr.org www.biodefense2016.org

Form A, part 2 (iii)

National biological defence research and development programmes

Facilities

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. What is the name of the facility?
Wehrwissenschaftliches Institut für Schutztechnologien – ABC-Schutz
(Bundeswehr Research Institute for Protective Technologies and NBC-Protection)
2. Where is it located?
D-29633 Munster/Oertze, Humboldtstrasse 100, Germany
(53°00 North, 10°08 East)
3. Floor area of microbiological laboratory areas by containment level:

BSL 2	520 m ²
BSL 3 stationary laboratories	360 m ²
BSL 3 containment (vehicle bound)	6 m ²
BSL 4	----- m ²
Total Laboratory Floor Area	886 m ²
4. The organisational structure of the Biological Departments:

The workload of the Biological Departments of the facility is approx. 90 percent in B-defence and approx. 10 percent in bio-analytics. The following detailed personnel list covers the total strength for both working areas because of the engagement of some of the personnel in both areas.

 - I) Total Number of personnel: 27
 - II) Division of personnel civilian 27
 - III) Division of personnel by category

Scientists	05
Engineers	06
Technicians	16
 - IV) Represented scientific disciplines:
Biology, biochemistry, immunology, molecular biology, bacteriology, mycology, virology, toxicology, toxinology, biotechnology, environmental toxicology, aerosol biology, disinfection, drinking water treatment
 - V) Contractor staff: 03 (of 27 total number of personnel)
 - VI) Source of funding:
 - Federal Ministry of Defence
 - EU FP 7 (European Union, Seventh Framework Programme)
 - EDA (European Defense Agency)
 - VII) Funding levels for the following program areas:
The funding for the 90 percent share for personnel, consumable items and equipment in 2015 was approx. 2.2 Mio EURO.

Research	40 %
Development	30 %
Test and Evaluation	30 %

VIII) Publication policy
Results will be published in reports to the Federal Office for Equipment, IT and In-Service Support and to the Federal Ministry of Defense. They will also be presented in public scientific journals and in national and international scientific meetings and symposiums.

IX) Lists of public available books, papers and reports resulting from the work during the previous 12 months: (not included posters and other presentations)

1. Eckelt, E, Meißner, T, Meens, J, Laarmann, K, Nerlich, A, Jarek, M, Weiss, S, Gerlach, GF, Goethe, R, 2015. FurA contributes to the oxidative stress response regulation of *Mycobacterium avium* ssp *paratuberculosis*. *Frontiers in Microbiology* 6, 6:16
2. M. Kruse, M. Winkler, S. Schirmer, B. Niederwoehrmeier: Identification of biological Hazards in spices and herbs; 6th Congress of European Microbiologists (FEMS); June 2015, Maastrich, NL
3. M. Kruse, S. Schirmer, B. Niederwoehrmeier: Identification of Biological Warfare Agents as Contaminants in Spices and Herbs; 3rd International Symposium on Development of CBRN Defence Capabilities; Oktober 2015, Berlin; CBRN Magazin 2015
4. Worbs S, Skiba M, Söderström M, Rapinoja ML, Zeleny R, Russmann H, Schimmel H, Vanninen P, Fredriksson SÅ, Dorner BG, 2015. Characterization of Ricin and *R. communis* Agglutinin Reference Materials. *Toxins.*, 26;7(12): 4906-34
5. Eckelt, E, Meißner, T, Meens, J, Laarmann, K, Nerlich, A, Jarek, M, Weiss, S, Gerlach, GF, Goethe, R, 2015. FurA contributes to the oxidative stress response regulation of *Mycobacterium avium* ssp *paratuberculosis*. *Frontiers in Microbiology* 6, 6:16
6. M. Kruse, M. Winkler, S. Schirmer, B. Niederwoehrmeier: Identification of biological Hazards in spices and herbs; 6th Congress of European Microbiologists (FEMS); June 2015, Maastrich, NL

5. Brief description of the biological defence work carried out at the facility, including studies using types of micro-organisms and/or toxins, as well as outdoor studies of biological aerosols.

For these purposes microbiological safety laboratories of biosafety levels BSL 1- 3 and biosafety S 1 laboratories for genetically engineered agents are operated, which allow development and research in all areas of B-protection and the investigation of suspect samples in case of CBRN scenarios.

The mission is to close capability gaps in B-defense of the Bundeswehr. Development and optimization of the rapid identification/detection of biowarfare agents, development of the elemental basics for the generation and verification of protection factors and both outline and establishment of new and pioneering approaches in decontamination are the primary focus of the biological laboratories and B-detection.

- a. Development of early-warning systems permitting non-specific identification of toxins, bacteria and viruses.
- b. Optimization of the properties of the available, previously generated detection molecules in their specificity, affinity and avidity for use in the immunological detection and identification systems, which inevitably must be suitable also for field-use. Using new technologies (e.g. development and identification of recombinant antibodies), the repertoire of antibodies and detection molecules for biological agents is constantly expanded.
- c. Optimization and automatisisation of immunological and molecular genetical identification methods.

- d. Development of equipment and procedures for sampling and rapid and accurate identification of toxins and pathogenic agents in samples from air, water, soil, vegetation (sensor-equipment, collectors, detection kits, automatisisation).
- e. Sample concentration and preparation incl. inactivation for identification in different matrices.
- f. Efficient sample processing and risk mitigation method for ensuring both safe handling and preparation of mixed CBRN samples for the following identification analysis of the CBRN agents. Aim is to develop a set of validated procedures for the separation and preparation of a potential mixture of CBRN agents into distinct C, B, RN aliquots to be further prepared for simultaneously, parallel and/or successively identification analyses, independent of sample matrix, without an impact on each CBRN compound and reducing the turn-around-time for analysis.
- g. Stability-tests for B-agents in different matrices.
- h. Development of procedures for disinfection and decontamination.
- i. B-Agents and toxin laboratory analysis with suspect samples.
- j. Toxin preparation and analytics.
- k. Participation in round-robin exercises.
- l. Nanotechnology for materials like clothes, paints, etc.

The current programme covers non-human/non-animal pathogen biosafety level 1 and pathogenic biosafety level 2 and 3 organisms as well as low-molecular weight toxins.

Outdoor studies were performed for water-purification tests using *Bacillus atrophaeus* spores and *E. coli* phages as simulants outside the laboratories.

Form A, part 2 (iii)**National biological defence research and development programmes****Facilities**

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. What is the name of the facility?

Zentrales Institut des Sanitätsdienstes der Bundeswehr Kiel, Abteilung II – Veterinärmedizin, Laborgruppe Spezielle Tierseuchen- und Zoonosendiagnostik (Central Institute of the Bundeswehr Medical Service Kiel, Laboratory for Infectious Animal Diseases and Zoonosis).

2. Where is it located?

D-24119 Kronshagen, Kopperpahler Allee 120.
(54°20'24" N, 10°05'37" E)

3. Floor area of laboratory areas by containment level:

BL 2	274 m ²
BL 3	47 m ²
BL 4	--
Total Laboratory Floor Area	321 m ²

4. The organisational structure of the facility:

The workload is 75 per cent in the diagnosis of infectious animal diseases and zoonosis and 25 per cent in B-defence.

- | | | |
|-------|--|------|
| I) | Total Number of personnel: | 6 |
| II) | Division of personnel | |
| | Military | 3 |
| | Civilian | 3 |
| III) | Division of personnel by category | |
| | Scientists | 3 |
| | Technicians | 3 |
| IV) | Represented scientific disciplines: | |
| | Veterinary medicine, microbiology, virology, bacteriology, parasitology, molecular biology, immunology | |
| V) | Contractor staff: | 1 |
| VI) | Source of funding: | |
| | Federal Ministry of Defence | |
| VII) | Funding levels for the following program areas: | |
| | The funding for consumable items and equipment in 2015 was approx. 0.64 million EURO. | |
| | Research | 40 % |
| | Development | 20 % |
| | Test and Evaluation | 35 % |
| | Education and Training | 5 % |
| VIII) | Publication Policy | |
| | Results will be published primarily in reports to the Federal Ministry of Defence and in | |

journals for military medicine or technology. Additional presentations occur in public scientific journals as well as national and international scientific meetings and symposiums.

- IX) Provide a list of publicly- available papers and reports resulting from the work published during the previous 12 month (To include authors, titles and full references):
1. Trojnar, E., Szabo, K., Anheyer-Behmenburg, H., Binder, A., Schotte, U., Ellerbroek, L., Klein, G., John, R.: Detection of hepatitis E virus RNA in raw sausages and liver sausages from retail in Germany using an optimized method. *Int J Food Microbiol* 2015 Dec 23; 215: 149-156.
 2. Frickmann, H., Warnke, P., Frey, C., Schmidt, S., Janke, C., Erkens, K., Schotte, U., Köller, T., Maaßen, W., Podbielski, A., Binder, A., Hinz, R., Queyriaux, B., Wiemer, D., Schwarz, N. G., Hagen, R. M.: Surveillance of food- and smear-transmitted pathogens in European soldiers with diarrhea on deployment in the tropics – experience from the European Union Training Mission (EUTM) Mali. *Biomed Res Int., Special Issue “Epidemiology, Detection, and Control of Foodborne Microbial Pathogens”*; 2015:573904. doi:10.1155/2015/573904.
 3. Ahlfeld, B., Li, Y., Boulaaba, A., Binder, A., Schotte, U., Zimmermann, J.L., Morfill, G., Klein, G.: Inactivation of a foodborne norovirus outbreak strain with nonthermal atmospheric pressure plasma. *MBio*. 2015 Jan 13; 6(1). pii: e02300-14. doi:10.1128/mBio.02300-14.
 4. Frickmann, H. Hinz, R., Ebert, K.-P., Wenzel, W., Müller, M., Schotte, U., Binder, A., Wiemer, D., Hagen, R. M.: Atypisch resistente Erreger in subtropischen und tropischen Einsatzgebieten und bei Kriegsversehrten aus Krisengebieten – ein Update. *Wehrmed. Mschr.* 3/2015, 81-86
 5. Petrov, A., Schotte, U., Pietschmann, J., Dräger, C., Beer, M., Anheyer-Behmenburg, H., Goller, K.V., Blome, S.: Alternative sampling strategies for passive Classical and African swine fever surveillance in wild boar. *Vet Microbiol* 2014 Oct 10; 173 (3-4):360-365. doi: 10.1016/j.vetmic.2014.07.030.
5. Brief description of the biological defence work carried out at the facility, including types of micro-organisms and/or toxins studied, as well as outdoor studies of biological aerosols:
- a. Development and evaluation of diagnostic systems permitting specific identification of microorganisms, parasites, viruses and toxins
 - b. Development of test kits for use in a deployable containerised field laboratory
 - c. Diagnosis of zoonoses i.e. Q-Fever, Anthrax, Rabies, Leishmaniasis, Avian Influenza and other Influenza viruses, Hepatitis E-Virus, *Anaplasma* sp.
 - d. Diagnosis of infectious animal diseases, especially Swine Fever, Babesiosis, Bovine Viral Diarrhea Virus, Schmallenberg-Virus
 - e. Diagnosis of food and waterborne threats, i.e. *Vibrio cholerae* , Norovirus, Hepatitis E-Virus
 - f. Evaluation of test kits for the detection of *Clostridium botulinum* toxins and *Clostridium perfringens* toxins

The current program covers RG I, II and III organisms.
No outdoor studies of biological aerosols.

Form A, part 2 (iii)

National biological defence research and development programmes

Facilities

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. What is the name of the facility?

Schule für ABC-Abwehr und Gesetzliche Schutzaufgaben (SABCAbw/GSchAufg) – (CBRN Defence, Safety and Environmental Protection School (CDSEP))

2. Where is it located?

D-87527 Sonthofen/Allgäu, Mühlenweg 12
(47°31' N, 10°17' E)

3. Floor area of laboratory areas by containment level:

BL 2	270 m ²
BL 3	--
BL 4	--
Total Laboratory Floor Area	270 m ²

4. The organisational structure of the facility:

I) Total Number of personnel: 12

II) Division of personnel

Civilian	3
Military	9

III) Division of personnel by category

Scientists	2
Engineers	2
Technicians	7
Physician	1

IV) Represented scientific disciplines:

Molecular biology, toxicology, serology, microbiology, entomology

V) Contractor staff: 0

VI) Source of funding:

Federal Ministry of Defence

VII) Funding levels for the following program areas:

The funding for consumable items and equipment in 2015 was approx. 0.08 Mio EURO.

Development	30 %
Test and Evaluation	20 %
Education and Training	50 %

VIII) Publication policy

Results will be published primarily in reports to the Federal Office for Equipment, IT and In-Service Support and to the Federal Ministry of Defence and will be presented in scientific meetings.

IX) Provide a list of publicly- available papers and reports resulting from the work published

during the previous 12 month (To include authors, titles and full references):

None

5. Brief description of the biological defence work carried out at the facility, including types of micro-organisms and/or toxins studied, as well as outdoor studies of biological aerosols:
 - a. Conceptual development of biological defence in the Bundeswehr
 - b. Initiation of and participation in the development of biological defence material and equipment; drafting of operational requirements
 - c. Review and establishment of detection methods for pathogens and toxins suitable for military use
 - d. Development of identification methods for the detection of low molecular toxins
 - e. Training of NBC defence personnel (theory and practice) including familiarization with the handling of vectors, microorganisms and toxins
 - f. Training support for non-military government authorities
 - g. Training support for military personnel of other states
 - h. Initiation and expert monitoring of studies in the field of biological defence
 - i. Drafting of joint publications for biological defence

The current program covers RG I and II organisms, inactivated material of pathogens RG III and IV, insects and ticks as well as high and low-molecular toxins; no work has been done with active viruses.

No outdoor studies of biological aerosols.

Form A, part 2 (iii)

National biological defence research and development programmes

Facilities

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. What is the name of the facility?

Centre for Biological Threats and Special Pathogens (Zentrum für Biologische Gefahren und Spezielle Pathogene, ZBS) at the Robert Koch Institute (RKI)

2. Where is it located (include both address and geographical location)?

Nordufer 20, 13353 Berlin, Germany (52°32' N 13°20' E)
Seestraße 10, 13353 Berlin, Germany (52°32' N 13°20' E)

3. Floor area of laboratory areas by containment level:

BL2	3350 sq m
BL3	130 sq m
BL4	0 sq m
Total laboratory floor area	3480 sq m

(In February 2015 a new laboratory building – including BSL4-laboratory space – was inaugurated. Technical evaluations were carried out in 2015; work on pathogens – including risk group 4 pathogens – is expected to start in 2016.)

4. The organizational structure of each facility.

(i) Total number of personnel 134

(ii) Division of personnel:

Military 0

Civilian 134

(iii) Division of personnel by category:

Scientists 78

Engineers 1

Technicians 49

Administrative and support staff 6

(iv) List the scientific disciplines represented in the scientific/engineering staff.

- Bacteriology
- Biology
- Biochemistry
- Bioinformatics
- Biotechnology
- Cell biology
- Chemistry
- Chemometrics
- Genomics
- Human biology

- Immunology
 - Laboratory medicine
 - Medicine
 - Microbiology
 - Molecular biology
 - Molecular medicine
 - Pharmacology
 - Prion research
 - Proteomics
 - Spectroscopy
 - Structural biology
 - Toxicology
 - Veterinary medicine
 - Virology
 - Zoology
- (v) Are contractor staff working in the facility? If so, provide an approximate number.
50 of the 134 staff are contractor staff. The sources of funding for the contractors are listed under 4 (vi).
- (vi) What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?
Bernhard Nocht Institute for Tropical Medicine Hamburg (Germany), Federal Chancellery, Federal Foreign Office, Federal Ministry for Economic Affairs and Energy, Federal Ministry of Health, Federal Ministry for Education and Research, Federal Office of Civil Protection and Disaster Assistance, German Academic Exchange Service (DAAD), German Research Foundation (Deutsche Forschungsgemeinschaft, DFG), State of Berlin, European Centre for Disease Prevention and Control, European Commission, foreign governmental agencies, industry, non-governmental organisations.
There is no funding by the Ministry of Defence.
- (vii) What are the funding levels for the following programme areas:
The total funding of the Federal Ministry of Health for personnel, consumable items and equipment for ZBS in 2015 was approximately 8.9 million EURO.
- Research and development 85 percent
 - Test and evaluation 15 percent
- (viii) Briefly describe the publication policy of the facility:
Scientists are encouraged to publish their results in peer reviewed scientific journals as well as present their work at national and international professional meetings.
The Robert Koch Institute signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, available at <http://oa.mpg.de/lang/en-uk/berlin-prozess/berliner-erklarung/>.
Under the Dual Use Regulations of the Robert Koch Institute scientists are required to assess the dual use potential of their research before a project is started, during the project period and before results are published.

- (ix) Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)
1. Albac S, Schmitz A, Lopez-Alayon C, d'Enfert C, Sautour M, Ducreux A, Labruère-Chazal C, **Laue M, Holland G**, et al. (2015): Candida albicans is able to use M cells as a portal of entry across the intestinal barrier in vitro. *Cell. Microbiol.*: Epub Aug 4. doi: 10.1111/cmi.12495.
 2. **Becker S, Lochau P, Jacob D, Heuner K, Grunow R** (2015): Successful re-evaluation of broth medium T for growth of Francisella tularensis ssp. and other highly pathogenic bacteria. *J. Microbiol. Methods*: Epub Dec 2. doi: 10.1016/j.mimet.2015.11.018.
 3. Binger T, Annan A, Drexler JF, Müller MA, Kallies R, Adankwah E, Wollny R, Kopp A, Heidemann H, Dei D, Agya-Yao FC, Junglen S, Feldt T, **Kurth A**, et al. (2015): A novel rhabdovirus isolated from the straw-coloured fruit bat Eidolon helvum with signs of antibodies in swine and humans. *J. Virol.* 89 (8): 4588-4597. Epub Feb 11. doi: 10.1128/JVI.02932-14.
 4. **Böttcher JP**, Siwakoti Y, et al. (2015): Visceral leishmaniasis diagnosis and reporting delays as an obstacle to timely response actions in Nepal and India. *BMC Infect. Dis.* 15 (53): 1–14. Epub Feb 6. doi: 10.1186/s12879-015-0767-5.
 5. Brézillon C, Haustant M, **Dupke S**, Corre JP, **Lander A, Franz T**, Monot M, Couture-Tosi E, Jouvion G, **Leendertz FH, Grunow R**, Mock ME, **Klee SR**, Goossens PL (2015): Capsules, toxins and AtxA as virulence factors of emerging Bacillus cereus biovar anthracis. *PLoS Negl. Trop. Dis.* 9 (4): e0003455. Epub Apr 1. doi: 10.1371/journal.pntd.0003455.
 6. Byrne HJ, Baranska M, Puppels GJ, Stone N, Wood B, Gough KM, **Lasch P**, et al. (2015): Spectropathology for the next generation: Quo vadis? *Analyst* 140 (7): 2066-2073. Epub Jan 22. doi: 10.1039/C4AN02036G.
 7. Caluwaerts S, Fautsch T, Lagrou D, Moreau M, Modet Camara A, Günther S, Di Caro A, Borremans B, Raymond Koundouno F, Akoi Bore J, Logue CH, **Richter M**, Wölfel R, Kuisma E, **Kurth A**, et al. (2015): Dilemmas in managing pregnant women with Ebola: 2 case reports. *Clin. Infect. Dis.*: Epub Dec 17. doi: 10.1093/cid/civ1024.
 8. Carroll MW, Matthews DA, Hiscox JA, Elmore MJ, Pollakis G, Rambaut A, Hewson R, García-Dorival I, Bore JA, Koundouno R, Abdellati S, Afrough B, Aiyepada J, Akhilomen P, Asogun D, Atkinson B, Badusche M, Bah A, Bate S, Baumann J, Becker D, Becker-Ziaja B, Bocquin A, Borremans B, Bosworth A, **Boettcher JP**, Cannas A, Carletti F, Castilletti C, Clark S, Colavita F, Diederich S, Donatus A, Duraffour S, Ehichioya D, **Ellerbrok H**, Fernandez-Garcia MD, Fizet A, Fleischmann E, Gryseels S, **Hermelink A, Hinzmann J, Hopf-Guevara U**, Ighodalo Y, Jameson L, Kelterbaum A, Kis Z, **Kloth S, Kohl C**, Korva M, Kraus A, Kuisma E, **Kurth A**, Liedigk B, Logue CH, Lüdtke A, Maes P, McCowen J, Mély S, Mertens M, Meschi S, Meyer B, **Michel J**, Molkenhain P, Munoz-Fontela C, Muth D, Newman ENC, Ngabo D, Oestereich L, Okosun J, Olorok T, Omiunu R, Omomoh E, Pallasch E, Pályi B, Portmann J, Pottage T, Pratt C, Priesnitz S, Quartu S, Rappe J, Repits J, **Richter M**, Rudolf M, **Sachse A, Schmidt KM**, Schudt G, Strecker T, Thom R, Thomas S, Tobin E, Tolley H, Trautner J, Vermoesen T, Vitoriano I, Wagner M, Wolff S, **Yue C**, Capobianchi MR, Kretschmer B, Hall A, Kenny JG, Rickett NY, Dudas G, Coltart CEM, Kerber R, Steer D, Wright C, Senyah F, Keita S, Drury P, Diallo B, de Clerck H, Van Herp M, Sprecher A, Traore A, Diakite M, Konde MK, Koivogui L, Magassouba N, Avšič-Županc T, **Nitsche A**, et al. (2015): Temporal and spatial analysis of the

- 2014–2015 Ebola virus outbreak in West Africa. *Nature* 524 (7563): 97–101. Epub Jun 17. doi: 10.1038/nature14594.
9. **Dabrowski PW**, Bourquain K, **Nitsche A** (2015): Multiplex pyrosequencing[®]: simultaneous genotyping based on SNPs from distant genomic regions. In: Lehmann U, Tost J (Hrsg), *Pyrosequencing. Methods and Protocols. Methods in Molecular Biology vol. 1315*. New York: Springer, pp. 337–347. doi: 10.1007/978-1-4939-2715-9_23.
 10. **Daus ML** (2015): Techniques to elucidate the conformation of prions. *World J. Biol. Chem.* 6 (3): 218–222. Epub Aug 26. doi: 10.4331/wjbc.v6.i3.218.
 11. **Detering H, Aebischer T, Dabrowski PW, Radonić A, Nitsche A, Renard BY, Kiderlen AF** (2015): First draft genome sequence of *Balamuthia mandrillaris*, the causative agent of amoebic encephalitis. *Genome Announc.* 3 (5): pii: e01013-15. Epub Sep 24. doi: 10.1128/genomeA.01013-15.
 12. **Dittmann C**, Han HM, Grabenbauer M, **Laue M** (2015): Dormant *Bacillus* spores protect their DNA in crystalline nucleoids against environmental stress. *J. Struct. Biol.* 191 (2): 156-164. Epub Jun 18. doi: 10.1016/j.jsb.2015.06.019.
 13. **Doellinger J, Schaade L, Nitsche A** (2015): Comparison of the cowpox virus and vaccinia virus mature virion proteome: analysis of the species- and strain-specific proteome. *PLoS One* 10 (11): e0141527. Epub Nov 10. doi: 10.1371/journal.pone.0141527.
 14. **Domingo C**, Alves MJ, de Ory F, **Teichmann A**, Schmitz H, Müller R, Niedrig M (2015): International external quality control assessment for the serological diagnosis of dengue infections. *BMC Infect. Dis.* 15 (167): 1-8. Epub Apr 1. doi: 10.1186/s12879-015-0877-0.
 15. **Geyer H, Ettinger J, Möller L**, Schmolz E, **Nitsche A**, Brune W, Heaggans S, Sandford GR, Hayward GS, **Voigt S** (2015): Rat cytomegalovirus (RCMV) English isolate and a newly identified Berlin isolate share similarities with but are separate as an anciently diverged clade from Mouse CMV and the Maastricht isolate of RCMV. *J. Gen. Virol.* 96 (7): 1873–1882. Epub Jul 1. doi: 10.1099/vir.0.000109.
 16. Gürtler L, Aepfelbacher M, Bauerfeind U, Blümel J, **Burger R**, Gärtner B, Gröner A, Heiden M, Hildebrandt M, Jansen B, **Offergeld R, Pauli G**, et al. (2015): Humanes Immunschwächevirus (HIV). *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 58 (11–12): 1351–1370. doi: 10.1007/s00103-015-2255-x.
 17. **Haller S, Eller C, Hermes J**, Kaase M, **Steglich M, Radonić A, Dabrowski PW, Nitsche A, Pfeifer Y, Werner G**, Wunderle W, **Velasco E, Abu Sin M, Eckmanns T, Nübel U** (2015): What caused the outbreak of ESBL-producing *Klebsiella pneumoniae* in a neonatal intensive care unit, Germany 2009 to 2012? Reconstructing transmission with epidemiological analysis and whole-genome sequencing. *BMJ Open* 5 (5): e007397. Epub May 11. doi: 10.1136/bmjopen-2014-007397.
 18. Hammerl JA, **Lasch P, Nitsche A, Dabrowski PW**, et al. (2015): Draft genome sequences of *Klebsiella oxytoca* isolates originating from a highly contaminated liquid hand soap product. *Genome Announc.* 3 (4): pii: e00820-15. Epub Jul 23. doi: 10.1128/genomeA.00820-15.
 19. **Hauser A, Kuecherer C**, Kunz A, **Dabrowski PW, Radonić A, Nitsche A**, Theuring S, **Bannert N**, Sewangi J, Mbezi P, Dugange F, Harms G, **Meixenberger K** (2015): Comparison of 454 ultra-deep sequencing and allele-specific real-time PCR with regard to the detection of emerging drug-resistant minor HIV-1 variants after antiretroviral prophylaxis for vertical transmission.

- PLoS One* 10 (10): e0140809. Epub Oct 15. doi: 10.1371/journal.pone.0140809.
20. Hobi S, Mueller RS, Hill M, **Nitsche A**, et al. (2015): Neurogenic inflammation and colliquative lymphadenitis with persistant orthopox virus DNA detection in a human case of cowpox virus infection transmitted by a domestic cat. *Br. J. Dermatol.* 173 (2): 535-539. Epub Feb 1. doi: 10.1111/bjd.13700.
 21. **Imhoff M, Hagedorn P, Schulze Y, Hellenbrand W**, Pfeffer M, Niedrig M (2015): Review: Sentinels of tick-borne encephalitis risk. *Ticks Tick-Borne Dis.* 6 (5): 592-600. Epub May 11. doi: 10.1016/j.ttbdis.2015.05.001.
 22. Keim P, **Grunow R**, Vipond R, Grass G, Hoffmaster A, Birdsell DN, **Klee SR**, et al. (2015): Whole genome analysis of injectional anthrax identifies two disease clusters spanning more than 13 years. *EBioMedicine* 2 (11): 1613–1618. Epub Oct 6. doi: 10.1016/j.ebiom.2015.10.004.
 23. Kobak L, Raftery MJ, **Voigt S**, Kühl AA, Kilic E, **Kurth A**, Hofmann J, **Nitsche A, Schaade L**, et al. (2015): Hantavirus-induced pathogenesis in mice with a humanized immune system. *J. Gen. Virol.* 96 (Pt 6): 1258-1263. Epub Feb 12. doi: 10.1099/vir.0.000087.
 24. **Kohl C, Brinkmann A, Dabrowski PW, Radonić A, Nitsche A, Kurth A** (2015): Protocol for metagenomic virus detection in clinical specimens. *Emerg. Infect. Dis.* 21 (1): 48–57. Epub Jan. doi: 10.3201/eid2101.140766.
 25. **Kratz T**, Roddy P et al. (2015): Ebola virus disease outbreak in Isiro, Democratic Republic of the Congo, 2012: signs and symptoms, management and outcomes. *PLoS ONE* 10 (6): e0129333. Epub Jun 24. doi: 10.1371/journal.pone.0129333.
 26. **Kuhring M, Dabrowski PW, Piro VC, Nitsche A, Renard BY** (2015): SuRankCo: supervised ranking of contigs in de novo assemblies. *BMC Bioinformatics* 16: 240. Epub Jul 30. doi: 10.1186/s12859-015-0644-7.
 27. **Kull S, Schulz KM**, Strotmeier JW, **Kirchner S, Schreiber T**, Bollenbach A, **Dabrowski PW, Nitsche A**, Kalb SR, **Dorner MB**, Barr JR, Rummel A, **Dorner BG** (2015): Isolation and functional characterization of the novel Clostridium botulinum neurotoxin A8 subtype. *PLoS One* 10 (2): e0116381. Epub Feb 6. doi: 10.1371/journal.pone.0116381.
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5. Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms¹ and/or toxins studied, as well as outdoor studies of biological aerosols:

The Centre for Biological Threats and Special Pathogens is divided into a Federal Information Centre for Biological Threats and Special Pathogens (Informationsstelle des Bundes für Biologische Gefahren und Spezielle Pathogene, IBBS) and six departments (ZBS 1-6). The departments are briefly described below. More information can be obtained on the RKI homepage:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/CenterBioSafety_node.html.

The responsibility of the **Federal Information Centre for Biological Threats and Special Pathogens** (IBBS) is to strengthen national public health preparedness and response capabilities to biological threats caused by highly pathogenic or bioterrorism-related agents ("special pathogens"). IBBS provides support for the public health sector regarding early detection, situation assessment and response to unusual biological incidents related to bioterrorism or any natural occurrence or accidental release of highly pathogenic agents. Key aspects of activity are 1) preparedness and response planning for incidents related to special pathogens, and 2) response to bioterrorism or any unusual biological incident caused by special pathogens. IBBS heads the office of the German "Permanent Working Group of Medical Competence and Treatment Centers" (Ständiger Arbeitskreis der Kompetenz- und Behandlungszentren für hochkontagiöse und lebensbedrohliche Erkrankungen, STAKOB). More information can be obtained using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/ibbs/ibbs_node.html.

ZBS 1, the **Department for Highly Pathogenic Viruses**, is responsible for the establishment of diagnostic methods to detect high-risk pathogens, in particular imported viruses and viruses that could be used for bioterrorist attacks, for the establishment of methods to detect genetically modified viruses, for the development of antigen-based detection methods for risk category 3 pathogens (eventually, risk category 4 pathogens), for the development of rapid and sensitive nucleic acid-based detection methods for the identification, characterisation and differentiation of pathogens of high-risk groups, for the development of strategies for the combat and prevention of infections with highly pathogenic viruses, for research on these pathogens in order to improve both therapy and prophylaxis, for research on mechanisms of pathogenesis of both wild-type viruses and genetically modified viruses that could be used as bioweapons, for the development of SOPs (standard operating procedures) for diagnostics, for the provision of reference samples, standards and materials for diagnostics, for the quality management and further development of detection methods based on serologic or virologic parameters or the pathogen's molecular biology including interlaboratory experiments, and for the organisation of collaborations with European and international high level disease safety laboratories. ZBS1 hosts the Central Sequencing Laboratory of the RKI, and the Consultant Laboratory for Poxviruses.

More information can be obtained using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs1/zbs1_node.html.

¹ Including viruses and prions.

ZBS2, the **Department for Highly Pathogenic Microorganisms**, is responsible for the organisation of the diagnostics of samples with bioterrorism suspicion within ZBS, for the development and optimisation of microbiological, molecular biological and immunological detection systems for the identification, characterisation and differentiation of highly pathogenic microorganisms, for the management of a culture collection with highly pathogenic and other relevant microorganisms, for the supply of reference materials for diagnostics of relevant microbial pathogens within the framework of cooperative projects, for quality assurance measures in the field of diagnostics (QUANDHIP), for research in the field of epidemiology, pathogenesis and genetics of selected highly pathogenic bacteria with a focus on *B. anthracis* and *F. tularensis*, for a Working Group “Cellular interactions of bacterial pathogens” with a focus on *F. tularensis* and amoebae as a reservoir for bacterial pathogens, for the development and testing of decontamination and disinfection processes in particular for bioterrorist attacks, and for studies on the evidence and tenacity of highly pathogenic microorganisms under different environmental conditions. For these activities, the department is running a BSL 3 laboratory. ZBS2 has conducted training in support of the United Nations Secretary-General’s Mechanism for Investigation of Alleged Use of Biological Weapons (UNSGM Training). More information can be obtained at:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs2/zbs2_node.html.

ZBS3, the **Department for Biological Toxins**, is responsible for the diagnostics of plant and microbial toxins that could be used for bioterrorist attacks using techniques based on cell biological, genetical and serological parameters, as well as chromatographic methods and mass spectroscopy, for the development of SOPs for diagnostics, for the provision of reference samples, reference bacterial strains and standards, and storage of diagnostic material, for the adaptation of the diagnostic materials to the expected sample material, for the development of strategies for the detection of novel and modified toxins and agents, for research on the pathogenesis of the diseases induced, for interlaboratory experiments to assure the quality of diagnostics, for contribution to the development of standard therapies, and for characterisation of adherence/colonisation factors in toxin-producing and tissue-damaging bacteria. More information can be obtained using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs3/zbs3_node.html.

ZBS4, the **Department for Advanced Light and Electron Microscopy**, is responsible for the rapid diagnostic electron microscopy (EM) of pathogens (primary diagnostics, identification and differentiation of bacterial and viral pathogens in environmental and patient samples), for the morphological characterisation and classification of both novel and rare pathogens by EM, for the development, testing and standardisation of preparation methods for diagnostic EM of pathogens, and for the organisation of an international quality assurance testing scheme and of advanced training courses to preserve and improve quality standards in diagnostic EM light and electron microscopy investigations of pathogens and mechanisms of their infectivity, pathogenicity or tenacity. ZBS4 is the core facility for digital photography, image documentation and for light and electron microscopy at the RKI. It hosts the Consultant Laboratory for Diagnostic Electron Microscopy of Infectious Pathogens. More information can be obtained using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs4/zbs4_node.html.

ZBS5, the **Department for Biosafety Level 4 Laboratory**, is responsible for planning, setting up and operating a biosafety level 4 (BSL-4) laboratory within the RKI, for the establishment of diagnostic methods and diagnostic of pathogens in biosafety level 4, for the development of strategies for the prevention, decontamination and control of highly pathogenic viruses together with IBBS and ZBS 1, for the development of decontamination and disinfection measures for BSL-4 pathogens, for investigating the ability of BSL-4 pathogens to survive in biological and environmental samples, and for participation in and organisation of interlaboratory tests for quality assurance of diagnostics (national and international). More information can be obtained at: http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs5/zbs5_node.html.

ZBS6, the **Department for Proteomics and Spectroscopy**, is responsible for the characterisation of highly pathogenic microorganisms by means of proteomic techniques (MALDI-TOF and ESI-MS, 2D-PAGE) and bioinformatics, for research on the molecular and structural bases underlying the proteinaceous seeding activity of prions and other self-replicating protein particles (“prionoids”) in transmissible and non-transmissible proteinopathies, for proteomics and molecular biology of proteinopathies and neurodegenerative diseases, for the rapid detection of pathogens by vibrational (infrared and Raman) spectroscopy and microspectroscopy, for the development of methods for the characterisation of agents with bioterrorism potential based on surface-enhanced and tip-enhanced Raman spectroscopy (SERS, TERS), and for the characterisation of cells, cell clusters and tissue structures for pathologically and/or chronically degenerative processes by means of microspectroscopic techniques (Raman, infrared and MALDI microspectroscopy and imaging) in combination with modern methods of bioinformatics. ZBS6 hosts the Research Group “Prions and Prionoids” and the Research Group “Proteinopathies / Neurodegenerative Diseases”. More information can be obtained at: http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs6/zbs6_node.html.

A list of highly pathogenic biological agents and toxins for which detection methods are established at the RKI can be obtained using the following link: http://www.rki.de/EN/Content/Prevention/Bioterrism/Diagnostik/diagnostics-detection_node_en.html. The list contains *Bacillus anthracis*, *Brucella melitensis*, *abortus* and *spp.*, *Burkholderia mallei* and *pseudomallei*, *Clostridium botulinum*, *Coxiella burnetii*, *Francisella tularensis*, ricin, staphylococcal enterotoxins/ *Staphylococcus aureus*, Variola major, Venezuelan equine encephalomyelitis virus, haemorrhagic fever viruses, and *Yersinia pestis*. Please note that for several of the agents listed only diagnostics are developed while no research on the pathogen itself is carried out, e.g. smallpox virus.

Outdoor studies of biological aerosols have not been conducted.

Form B

Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins

No outbreaks of infectious diseases or similar occurrences caused by toxins that seemed to deviate from the normal pattern were registered in Germany during 2015.

Infectious disease data and public health information are published weekly by the Robert Koch Institute in "Epidemiologisches Bulletin". The Bulletin is available at:

http://www.rki.de/DE/Content/Infekt/EpidBull/epid_bull_node.html.

Under the OIE WAHIS/WAHID reporting system Germany in 2015 provided information about exceptional animal disease events regarding one outbreak of glanders, one outbreak of highly pathogenic avian influenza and three outbreaks of low pathogenic avian influenza. Detailed information is available at: www.oie.int/wahis_2/public/wahid.php/Countryinformation/Countryreports

Form C

Encouragement of publication of results and promotion of use of knowledge

Germany encourages scientist and scientific institutions to publish the results of research without any restrictions in scientific journals as well as presenting their work at national and international professional meetings. In sensitive research and development areas scientist and scientific institutions are advised to publish under peer review procedures.

The Robert Koch Institute as well as other German scientific and professional institutions signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, available at <http://oa.mpg.de/lang/en-uk/berlin-prozess/berliner-erklarung/>

In 2015 scientific papers related to research and development for prophylactic and/or protective measures against microbial and biological agents and toxins sponsored by the Federal Ministry of Defence have been published inter alia in the following journals:

Acta Parasitologica
Applied and Environmental Microbiology
BMC Infectious Diseases
Emerging Infectious Diseases
Epidemiology and Infection
European Journal of Microbiology and Immunology
Euro Surveillance
Genome Announcements
Infection
International Journal of Systematic and Evolutionary Microbiology
International Journal of Medical Microbiology
Journal of Antimicrobial Chemotherapy
Journal of Clinical Virology
Journal of General Virology
Journal of Medical Virology
Journal of Medical Microbiology
Journal of Microbiological Methods
Lancet Infectious Diseases
Nature
Nucleic Acids Research
Open Microbiology
PLoS ONE
PLoS Pathogens
PLoS Neglected Tropical Diseases
Ticks Tick Borne Diseases
Virus Genes
Zoonoses Public Health

Form G

Declaration of vaccine production facilities

A.1. Name of Facility

GlaxoSmith Kline Biologicals

2. Location (mailing address):

Postfach 1630

D-35006 Marburg

3. General description of the types of diseases covered:

Botulism (toxin, toxoid), diphtheria, pertussis, rabies, tetanus, tick-borne encephalitis and meningococcal meningitis A, B, C, W, Y

B.1. Name of Facility

Dynavax GmbH

2. Location (mailing address):

Eichsfelder Str. 11

D-40595 Düsseldorf

3. General description of the types of diseases covered:

Hepatitis B (commissioned production, no own licence for marketing)

C.1. Name of Facility

Vibalogics GmbH

2. Location (mailing address):

Zeppelinstr. 2

D-27472 Cuxhaven

3. General description of the types of diseases covered:

Tuberculosis bacterial vaccine (commissioned production for clinical trials, no own licenses for marketing), smallpox (MVA), Ebola (recombinant Adeno-/MVA vaccine)

D.1. Name of Facility

IDT Biologika GmbH

2. Location (mailing address):

Postfach 400214

D-06861 Dessau-Roßlau

3. General description of the types of diseases covered:

Live recombinant Smallpox vaccines (Investigational Medicinal Product), live recombinant HIV vaccines (Investigational Medicinal Product), live recombinant Malaria vaccines (Investigational Medicinal Product), live recombinant Filovirus vaccines (Investigational Medicinal Products), live recombinant Flavivirus vaccines (Investigational Medicinal Products), MERS-CoV (Investigational Medicinal Product)

E.1. Name of Facility

GlaxoSmithKline Biologicals (Branch of SB Pharma GmbH & Co KG)

2. Location (mailing address):

Zirkusstr. 40

D-01069 Dresden

3. General description of the types of diseases covered:

Influenza virus vaccine for human immunization purposes