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			
A, part 2 (i)			
A, part 2 (ii)			
A, part 2 (iii)			
B			
C			
E		X	2012
F		X	1992
G			

(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 2017

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 (m^2):
Two maximum containment units (biosafety level 4), approx. 150 m^2

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 (m^2):
Two maximum containment units, 110 m^2 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 one of the most important bodies for the safeguarding of public health in Germany. Since its founding in 1891, the Robert Koch Institute has been dedicated to the investigation and prevention of infectious diseases. Today, the institute is also responsible for nationwide health monitoring – the collected data are included in the health reporting of the federal government. Furthermore, the RKI collects and interprets epidemiological data communicated to the institute as a result of the Protection against Infection Act (Infektionsschutzgesetz, IfSG). Its scientists conduct research in infectious disease epidemiology as well as sentinel surveillance projects and support the federal states in outbreak investigations.

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. 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 online: *http://www.sanitaetsdienst-bundeswehr.de* (in German).

Federal Ministry of the Interior:
The Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (Federal Office of Civil Protection and Disaster Assistance) is testing available on-site detection systems for their usability.

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 2016 was approximately 8.3 million Euro.

Federal Ministry of Defence:
The total funding in 2016 was approximately 9.1 million Euro.

Federal Ministry of the Interior:
The total funding in 2016 was approx. 12 000 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

Federal Ministry of Defence:
Yes

Federal Ministry of the Interior:
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:
Less than 10 %

Federal Ministry of the Interior:
Approx. 100 %

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:

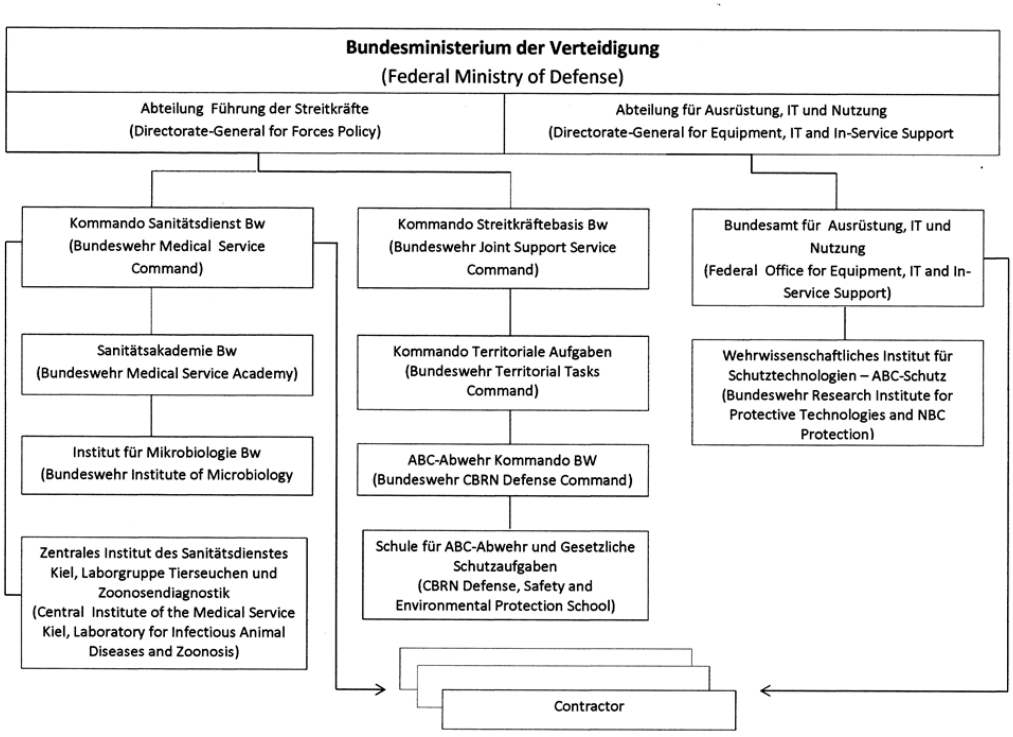
The objective of the contracted activities is to provide pertinent expertise and hardware to the Federal Ministry of Defence for the improvement of B-defence capabilities. The research areas are the same as mentioned above under #1.

Federal Ministry of the Interior:
The objective of the contracted activities is an assessment and implementation of on-site detection equipment.

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:



Federal Ministry of the Interior:
Testing of the Razor EX System takes place by the Robert Koch Institute, ZBS1 (see above for the organizational structure).

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:

One 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.

Federal Ministry of the Interior:

With regard to the out-contracted project of the Federal Office of Civil Protection and Disaster Assistance, please refer to Form A, part 2 (iii) of the Federal Ministry of Health, which includes the executing institution Robert Koch Institute, ZBS 1.

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`N, 11°34`E)

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: 18
   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 2016 was approx. 6.4 million Euro.

Research	40 %
Development	15 %
Test and Evaluation	35 %
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 months:

Publications, „peer-reviewed“

1. Al-Deeb MA, Frangoulidis D, Walter MC, Kömpf D, Fischer SF, Petney T, Muzaffar SB. (2016). 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, M, Elschner, M, Gaede, W, Schliephake, A, Grass, G, and H. Tomaso (2016). Genome sequence of *Bacillus anthracis* strain Stendal, isolated from an anthrax outbreak in cattle in Germany. Genome Announc. 2016 Apr 7;4(2).
3. Brugger K, Boehnke D, Petney T, Dobler G, Pfeffer M, Silaghi C, Schaub GA, Pinior B, Dautel H, Kahl O, Pfister K, Süss J, Rubel F. (2016). A densitiy map oft he tick-borne encephalitis and Lyme borreliosis vector Ixodes ricinus (Ixodidae) for Germany. J Med Entomol 53(6), 1292-1302.
4. Caluwaerts, S., T. Fautsch, D. Lagrou, M. Moreau, A. Modet Camara, S. Gunther, A. Di Caro, B. Borremans, F. Raymond Koundouno, J. Akoi Bore, C. H. Logue, M. Richter, R. Wölfel, E. Kuisma, A. Kurth, S. Thomas, G. Burkhardt, E. Erland, F. Lionetto, P. Lledo Weber, O. de la Rosa, H. Macpherson and M. Van Herp (2016). "Dilemmas in Managing Pregnant Women With Ebola: 2 Case Reports." Clin Infect Dis 62(7): 903-905.
5. Chinmay Dwibedi, Dawn Birdsell, Adrian Lärkeryd, Kerstin Myrtennäs, Caroline Öhrman, Elin Nilsson, Edvin Karlsson, Christian Hochhalter, Andrew Rivera, Sara Maltinsky, Brittany Bayer, Paul Keim, Holger C. Scholz, Herbert Tomaso, Matthias Wittwer, Christian Beuret, Nadia Schuerch, Paola Pilo, Marta Hernández Pérez, David Rodriguez-Lazaro, Raquel Escudero, Pedro Anda,12 Mats Forsman, David M. Wagner, Pär Larsson and Anders Johansson. (2016). Long-range dispersal moved Francisella tularensis into Western Europe from the East. DOI: 10.1099/mgen.0.000100 Microbial Genomics (in press)
6. Chiţimia-Dobler L, D'Amico G, Yao PK, Kalmár Z, Gherman CM, Mihalca AD, Estrada-Peña A. (2016). Description oft he male, redescription oft he female and 16S rDNA sequence of Ixodes aulacodi (Ixodidae). Ticks Tick Borne Dis 7(3), 4333-438.
7. Chitimia-Dobler L, Nava S, Bestehorn M, Dobler G, Wölfel S (2016). First detection of Hyalomma rufipes in Germany. Ticks Tick Borne Dis pii: S1877-959X(16)30132-7. doi: 10.1016/j.ttbdis.2016.08.008. [Epub ahead of print]
8. Dobler G, Bestehorn M, Antwerpen M, Överby-Wernstedt A (2016). Complete Genome Sequence of a Low-Virulence Tick-Borne Encephalitis Virus Strain. Genome Announc. 2016 Oct 20;4(5). pii: e01145-16. doi: 10.1128/genomeA.01145-16.
9. Dobler G, Bestehorn M, Antwerpen M, Överby-Wernstedt A. (2016). Complete genome sequence of a low-virulence tick-borne encephalitis virus strain. Genome Announc 4(5), 1145-1146.
10. Eisenberg T, Riße K, Schauerte N, Geiger C, Blom J, Scholz HC. Isolation of a novel 'atypical' Brucella strain from a bluespotted ribbontail ray (Taeniura lymma). Antonie Van Leeuwenhoek. 2016 Oct 26.
11. Fassbender P, Zange S, Ibrahim S, Zoeller G, Herbstreit F, Meyer H. (2016). Generalized cowpox virus infection in an HIV patient, Germany, 2012. Emerg Infect Dis. 22; 553-554
12. Feldman M, Harbeck M, Keller M, Spyrou MA, Rott A, Trautmann B, Scholz HC, Päffgen B, Peters J, McCormick M, Bos K, Herbig A, Krause J. A High-Coverage Yersinia pestis Genome from a Sixth-Century Justinianic Plague Victim. Mol Biol Evol. 2016 Nov;33(11):2911-2923.
13. Fröschl G, Ntinginya NE, Sangare A, Lawata P, Mangu C, Dobler G, Heinrich N, Flach B, Nsojo A, Lennemann T (2016). Integrated local, national and international stakeholders in outbreak preparedness in developing countries: conclusions from a conference in Mbeya, Tanzania. Health Secur 2016 14(1), 29-34.
14. Goyena E, Pérez-Cutillas P, Chitimia L, Risueño J, García-Martínez JD, Bernal LJ, Berriatua E. (2016) A cross-sectional study of the impact of regular use of insecticides in dogs on canine leishmaniosis seroprevalence in southeast Spain. Prev Vet Med 124,78-84.

15. Grass G, Bierbaum G, Molitor E, Götte N, Antwerpen MH. (2016). Genome Sequence of Bacillus pumilus Strain Bonn, Isolated from an Anthrax-Like Necrotic Skin Infection Site of a Child. Genome Announc. 2016 Feb

16. Grass, G, Ahrens, B, Schleenbecker, U, Dobrzykowski, L, Wagner, M, Krüger, C, and R. Wölfel, (2016). Technical Note: Simple, scalable, and sensitive protocol for retrieving *Bacillus anthracis* (and other live bacteria) from heroin. Forensic Science International. 259, 32-35.

17. Hardick J, Wölfel R, Gardner W, Ibrahim S: Sequencing Ebola and Marburg viruses genomes using micro-arrays. Journal of Medical Virology 01/2016; DOI:10.1002/jmv.24487

18. Heinemann P, Witkowski PT, Auste B, Essbauer S, Krüger N, Akoua-Koffic CG, Schaumburg F, Leendertz FH, Krüger DH. (2016). Human infections by non-rodent associated hantaviruses in Africa. J. Infect. Dis. 214(10); 1507-1511.

19. Heuser E, Fischer S, Ryll R, Mayer-Scholl A, Hoffmann D, Spahr C, Imholt C, Alfaa DM, Lüschow D, Johne R, Ehlers B, Essbauer S, Nöckler K, Ulrich RG. (2016). Survey for zoonotic pathogens in Norway rat populations from European cities. Pest Management Science Jun 14.

20. Ippolito G, Lanini S, Brouqui P, Di Caro A, Vairo F, Fusco FM, Krishna S, Capobianchi MR, Kyobe-Bosa H, Puro W, Wölfel R, Avsic-Zupanc T, Ioannidis J, Portella G, Kremsner P, Dar O, Bates M, Zumla A: Non-randomised Ebola trials—lessons for optimal outbreak research. The Lancet Infectious Diseases 04/2016; 16(4):407-408. DOI:10.1016/S1473-3099(16)00132-8

21. Karnath C, Obiegala A, Speck S, Essbauer S, Derschum H, Scholz H, Kiefer D, Tserennorov D, Dashdavaa O, Tsogbadrakh N, Jigjav B, Pfeffer M. (2016). Detection of *Babesia venatorum*, *Anaplasma phagocytophilum* and *Candidatus* Neoehrlichia mikurensis in *Ixodes persulcatus* ticks from Mongolia. Ticks Tick Borne Dis. 7(2); 357-60.

22. Kerber R, Krumkamp R, Diallo B, Jaeger A, Rudolf M, Lanini S, Bore JA, Koundouno FR, Becker-Ziaja B, Fleischmann E, Stoecker K, Meschi S, Mély S, Newman EN, Carletti F, Portmann J, Korva M, Wolff S, Molkenthin P, Kis Z, Kelterbaum A, Bocquin A, Strecker T, Fizet A, Castilletti C, Schudt G, Ottowell L, Kurth A, Atkinson B, Badusche M, Cannas A, Pallasch E, Bosworth A, Yue C, Pályi B, Ellerbrok H, Kohl C, Oestereich L, Logue CH, Lüdtke A, Richter M, Ngabo D, Borremans B, Becker D, Gryseels S, Abdellati S, Vermoesen T, Kuisma E, Kraus A, Liedigk B, Maes P, Thom R, Duraffour S, Diederich S, Hinzmann J, Afrough B, Repits J, Mertens M, Vitoriano I, Bah A, Sachse A, Boettcher JP, Wurr S, Bockholt S, Nitsche A, Županc TA, Strasser M, Ippolito G, Becker S, Raoul H, Carroll MW, De Clerck H, Van Herp M, Sprecher A, Koivogui L, Magassouba N, Keïta S, Drury P, Gurry C, Formenty P, May J, Gabriel M, Wölfel R, Günther S, Di Caro A. Analysis of Diagnostic Findings From the European Mobile Laboratory in Guéckédou, Guinea, March 2014 Through March 2015. J Infect Dis. 2016 Oct 15;214(suppl 3): 250-S257.

23. Kunze U, ISW TBE (2016). 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.

24. Lindqvist R, Mundt F, Gilthorpe JD, Wölfel S, Gekara NO, Kröger A,8, Överby AK (2016). Fast type I interferon response protects astrocytes from flavivirus infection and virus-induced cytopathic effects. J Neuroinflammation. DOI: 10.1186/s12974-016-0748-7

25. Miernik B, Casetti F, Panning M, Huzly D, Meyer H, and K Technau-Hafsi (2016). Multilocular Facial Necrosis in a Young Boy: A Quiz. Acta Derm Venereol. 2016 Jul 5. doi: 10.2340/00015555-2499.

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28. Obiegala A, Woll D, Karnath C, Silaghi C, Schex S, Essbauer S, Pfeffer M. (2016). Prevalence and genotype allocation of pathogenic Leptospira species in small mammals from various habitat types in Germany. PLoS Negl Trop. Dis. 10(3):e0004501.

29. Quick J, Loman NJ, Duraffour S, Simpson JT, Severi E, Cowley L, Bore JA, Koundouno R, Dudas G, Mikhail A, Ouédraogo N, Afrough B, Bah A, Baum JH, Becker-Ziaja B, Boettcher JP, Cabeza-Cabrerizo M, Camino-Sánchez Á, Carter LL, Doerrbecker J, Enkirch T, García-Dorival I, Hetzelt N, Hinzmann J, Holm T, Kafetzopoulou LE, Koropogui M, Kosgey A, Kuisma E, Logue CH, Mazzarelli A, Meisel S, Mertens M, Michel J, Ngabo D, Nitzsche K, Pallasch E, Patrono LV, Portmann J, Repits JG, Rickett NY, Sachse A, Singethan K, Vitoriano I, Yemanaberhan RL, Zekeng EG, Racine T, Bello A, Sall AA, Faye O, Faye O, Magassouba N, Williams CV, Amburgey V, Winona L, Davis E, Gerlach J, Washington F, Monteil V, Jourdain M, Bererd M, Camara A, Somlare H, Camara A, Gerard M, Bado G, Baillet B, Delaune D, Nebie KY, Diarra A, Savane Y, Pallawo RB, Gutierrez GJ, Milhano N, Roger I, Williams CJ, Yattara F, Lewandowski K, Taylor J, Rachwal P, Turner DJ, Pollakis G, Hiscox JA, Matthews DA, O'Shea MK, Johnston AM, Wilson D, Hutley E, Smit E, Di Caro A, Wölfel R, Stoecker K, Fleischmann E, Gabriel M, Weller SA, Koivogui L, Diallo B, Keïta S, Rambaut A, Formenty P, Günther S, Carroll MW. Real-time, portable genome sequencing for Ebola surveillance. Nature. 2016 Feb 11;530(7589): 228-32.

30. Rubel F, Brugger K, Pfeffer M, Chitimia-Dobler L, Didyk YM, Leverenz S, Dautel H, Kahl O. (2016). Geographical distribution of Dermacentor marginatus and Dermacentor reticulatus in Europe. Ticks Tick Borne Dis 7(1), 224-233.

31. Ruibal P, Oestereich L, Lüdtke A, Becker-Ziaja B, Wozniak DM, Kerber R, Korva M, Cabeza-Cabrerizo M, Bore JA, Koundouno FR, Duraffour S, Weller R, Thorenz A, Cimini E, Viola D, Agrati C, Repits J, Afrough B, Cowley LA, Ngabo D, Hinzmann J, Mertens M, Vitoriano I, Logue CH, Boettcher JP, Pallasch E, Sachse A, Bah A, Nitzsche K, Kuisma E, Michel J, Holm T, Zekeng EG, García-Dorival I, Wölfel R, Stoecker K, Fleischmann E, Strecker T, Di Caro A, Avšič-Županc T, Kurth A, Meschi S, Mély S, Newman E, Bocquin A, Kis Z, Kelterbaum A, Molkenthin P, Carletti F, Portmann J, Wolff S, Castilletti C, Schudt G, Fizet A, Ottowell LJ, Herker E, Jacobs T, Kretschmer B, Severi E, Ouedraogo N, Lago M, Negredo A, Franco L, Anda P, Schmiedel S, Kreuels B, Wichmann D, Addo MM, Lohse AW, De Clerck H, Nanclares C, Jonckheere S, Van Herp M, Sprecher A, Xiaojiang G, Carrington M, Miranda O, Castro CM, Gabriel M, Drury P, Formenty P, Diallo B, Koivogui L, Magassouba N, Carroll MW, Günther S, Muñoz-Fontela C. Unique human immune signature of Ebola virus disease in Guinea. Nature. 2016 May 5;533(7601): 100-4.

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36. Scholz HC, Revilla-Fernández S, Al Dahouk S, Hammerl JA, Zygmunt MS, Cloeckaert A, Koylass M, Whatmore AM, Blom J, Vergnaud G, Witte A, Aistleitner K, Hofer E. (2016). Brucella vulpis sp. nov., isolated from mandibular lymph nodes of red foxes (Vulpes vulpes). Int J Syst Evol Microbiol. May;66(5):2090-8. doi: 10.1099/ijsem.0.000998

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J. Guedj, A. Fizet, E. Barte de Sainte Fare, B. Murgue, T. Tran-Minh, C. Rapp, P. Piguet, M. Poncin, B. Draguez, T. Allaford Duverger, S. Barbe, G. Baret, I. Defourny, M. Carroll, H. Raoul, A. Augier, S. P. Eholie, Y. Yazdanpanah, C. Levy-Marchal, A. Antierrens, M. Van Herp, S. Gunther, X. de Lamballerie, S. Keita, F. Mentre, X. Anglaret, D. Malvy and J. S. Group (2016). "Experimental Treatment with Favipiravir for Ebola Virus Disease (the JIKI Trial): A Historically Controlled, Single-Arm Proof-of-Concept Trial in Guinea." PLoS Med 13(3): e1001967.

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55. Walter MC, Grass G, Antwerpen MH (2016). Whole genome core gene typing of Bacillus anthracis. 68. Jahrestagung der DGHM, Ulm, 11 to 14 September 2016

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57. Weiß A-W, Vollmar, P, von Buttlar H, Wölfel R, Hanczaruk M-A (2016). Ricin vs. Abrin – or how to distinguish twins? 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

Lectures (*lecturer)

1. Abdiyeva K*, Turebekov N, Shapiyeva Z, Ziyadina L, Dmitrovskiy A, Yegemberdiyeva R, Yeraliyeva L, Oradova A, Kachiyeva Z, Amirbekov A, Höper D, Zhalmagambetova A, Zinner J, Essbauer S, Frey S (2016). The South of Kazakhstan is a hotspot for the Siberian Subtype of Tick-borne encephalitis virus. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

2. Abdiyeva K*, Yeraliyeva L, Turebekov N, Dmitrovskiy A, Zinner J, , Kachiyeva Z, Amirbekov A, Oradova A, Shapiyeva Z, Höper D, Zhalmagambetova A, Frey S, Essbauer S (2016). Two Southern oblasts of Kazakhstan are a hotps ot for tick-borne encephalitis virus. Congress at Omsk Scientific Research Institute for Natural Foci. 15 to 16 November 2016, Omsk, Russia.

3. Ahrens* B, Grass G, Dobrzykowski L, Wagner M, Krüger C, Schleenbecker U, Wölfel R (2016). Screening of heroin for Bacillus anthracis-contamination, 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

4. Aikimbayev A, Finke J* (2016). The biological safety system in Kazakhstan. Medical Biodefense Conference, 26 to 29 April 2016, Munich

5. Antwerpen* MH (2016): "Vector-Hunters" and "Clueless Snowman" – Two MinION-missions as part of a rapid deployable Laboratory 1th CeBiTec Symposium: Microbial Genomics and Metagenomics in Human Health and Disease. 4 to 6 July 2016, Bielefeld

6. Antwerpen* MH (2016): Core Genome Investigation for Genotyping of Francisella tularensis. Tularemieworkshop des NRL Tularämie, 23 to 24 November 2016 Jena

7. Antwerpen* MH and L. Zöller (2016) From Bench to Bedside: Beitrag moderner Sequenziertechnologien zur Fähigkeitsentwicklung des Sanitätsdienstes. Tagung „Sanitätsdienst 2015 – Im Spannungsfeld zwischen Funktionalität, Schutz und Mobilität" 19 to 20 April 2016, Bad Godesberg

8. Antwerpen* MH, Georgi E, Genzel GH, Stoecker K, Walter MC. (2016) Sequencing's day out: Take your mini on the field. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

9. Antwerpen*, MH, Georgi, E, Northoff, B, Holdt, L, Huber, KL, Hölscher, M, Dobler, G, Walter, MC, Wölfel, S. (2016). Stationary or Mobile – NGS as practical tool for molecular diagnostics in emerging outbreaks. 68. Jahrestagung der Deutschen Gesellschaft für Hygiene und Mikrobiologie e. V., 11 to 14 September 2016, Bonn, Germany.

10. Bestehorn M*, Frey S, Eßbauer S, Heinz FX, Dobler G (2016). Phylogeographie des FSME-Virus in Mitteleuropa. 3. Süddeutscher Zeckenkongress. Hohenheim 14 to 16 March 2016.

11. Bugert*, J.J. (2016). Molluscum contagiosum virus, the only circulating human-specific poxvirus. LMU – Seminar am Institut für Infektionsmedizin und Zoonosen; Lehrstuhl für Virologie – Einladung G. Sutter. 28 July 2016, Munich.

12. Bugert*, J.J. (2016). Untersuchungen zu neuen antiviralen Wirkstoffen mit Virus- oder Zelltarget. Paul-Ehrlich-Institut, Bundesinstitut für Impfstoffe und biomedizinische Arzneimittel; Abtlg. Experimentelle Impfstoffe, Therapien & Diagnostika – Einladung V. v. Messling. 9 November 2016, Langen.

13. Chitimia_Dobler L* (2016). Tick-borne encephalitis – the actual situation. 17th Conference of the International Scientific Working Group on Tick-borne Encephalitis (ISW-TBE). Wien, Austria, 28 to 29 January 2016.

14. Chitimia-Dobler L* (2016). First detection of Ixodes inopinatus north of the Alpian Mountains. Nordtick Conference, Örenäs, Sweden 2 to 4 February 2016

15. Chitimia-Dobler L*, Bestehorn M, Nava S, Dobler G (2016). Erstmaliger Nachweis von Ixodes inopinatus in Südost-Deutschland und Österreich. 3. Süddeutscher Zeckenkongress. Hohenheim 14 to 16 March 2016.

16. Chitimia-Dobler* L (2016). Ixodes inopinatus nördlich der Alpen. Symposium Arthropoden übertragene Infektionen FLI, Jena 29 September 2016.

17. Coutu* JJ, Joachim Bugert, Daniel B. Nichols (2016). Characterization of a Mitochondrial localizing Molluscum Contagiosum Virus Protein: MC163. 35th Annual Meeting for the American Society for Virology – June 18 to 22, 2016; Blacksburg, Virginia, U.S.A.

18. Dmitrovsky A*, Frey S, Essbauer S, Zinner J, Yegemberdiyeva R, Yeraliyeva L, Shapiyeva Zh, Turebekov N, Abdiyeva K, Zhalmagambedtova A (2016). Improvement of laboratory diagnosis and biosafety when working with dangerous pathogens. Congress "Diagnosis and prevention of infectious diseases at the present stage", Central research Institute State scientific center of virology and biotechnology "Vector". 26 to 27 September 2016, Novosibirsk, Russia.

19. Dobler G* (2016). Frühsommer-Meningoenzephalitis (FSME). Marburger Infektiologiegespräche. Marburg, 13 April 2016.
20. Dobler G* (2016). FSME. Tübinger Infektiologen-Tagung. Tübingen 4 March 2016
21. Dobler G* (2016). Genotyping and phenotyping of TBE virus in Europe. Nordtick Conference, Örenäs, Schweden 2 to 4 February 2016.
22. Dobler G* (2016). Phylogeny of TBE virus in Europe. 17th Conference of the International Scientific Working Group on Tick-borne Encephalitis (ISW-TBE). Wien, Austria, 28 to 29 January 2016.
23. Dobler G* (2016). Tropische Viren: Epidemiologie und Diagnostik. Mikrogen-Fachgespräche, Neuried, 9 March 2016
24. Dobler G*, Bestehorn M, Kroeger A, Överby A (2016). Pathogenese der FSME. 3. Süddeutscher Zeckenkongress. Hohenheim 14 to 16 March 2016.
25. Dobler G*. (2016). Zecken in der Arbeitsmedizin – ein Thema? Jahrestagung der Deutschen Gesellschaft für Arbeits- und Umweltmedizin. München, 11 March 2016
26. Dobler* G (2016). Epidemiologie der FSME. Pfizer-Pressegespräch. Frankfurt, 30 May 2016.
27. Dobler* G (2016). Vektor-übertragene Zoonosen. Mögliche Szenarien. Tagung des Bundesamtes für Bevölkerungsschutz. St. Augustin 24 May 2016.
28. Dobler* G (2016). Zecken und ihre Bedeutung als Vektoren von Krankheitserregern. 3. Regensburger Zeckentagung. Regensburg, 18 June 2016
29. Dobler* G. (2016). FSME in Deutschland 2016. Symposium Arthropoden übertragene Infektionen FLI, Jena 29 September 2016.
30. Dobler* G. (2016). Possible Threats of emerging infections in the Southern Highlands of Tanzania. Symposium Emerging Infections in Tanzania. Mbeya, Tanzania, 21 November 2016.
31. Dobler* G. (2016). Schlechte und gute Nachrichten zur FSME. Münchner Impftag, Munich 19 November 2016.
32. Dobler* G. (2016). TBE Research at the Bundeswehr Institute of Microbiology. Pfizer Expertentreffen “Zecken und FSME”, Berlin 19 to 20 September 2016.
33. Dobler* G. (2016). The Biosecurity/Biosafety Program of the Bundeswehr Institute of Microbiology. Symposium Emerging Infections in Tanzania. Mbeya, Tanzania, 21 November 2016.
34. Dobler* G. (2016). Zika-virus – Zika-Fieber. Münchner Pädiatrie-Tag, München, 5 Juli 2016
35. Dresler* J, P Pajer, D Elleder, T Hron, H Kabickova, P Aganov, L Pisa, VKuzelka, P Veleminsky, J Klimentova, A Fucikova, V Benes, T Rausch, P, Dundr, A Pilin, R Cabala, M Hubalek, J Stribrny, K Fucik, E Liebler-Tenorio, M Elschner, M Antwerpen, and H Meyer (2016). BSL3-4 agents in the Czech National Museum depository and their value for the study of these organisms. Medical Biodefense Conference, 26 to 29 April 2016, Munich.
36. Eder IB, Vollmar P, Pfeffer M and H Meyer* (2016). Cowpox virus infection in a veterinary assistant transmitted by a cat. XXI International Poxvirus, Asfarvirus and Iridovirus Conference. 1 to 6 July 2016, Strassbourg, France.
37. Essbauer S, Dobler G* (2016). Hantaviren: neue Erkenntnisse zu Krankheitsfällen, Erregern und Reservoirtieren. 56. Wissenschaftliche Jahrestagung der DGAUM. 9 to 11 March 2016, Munich.
38. Essbauer* S (2016). Neue und altbekannte Erreger in Rötelmäusen, Ratten und Co. Pestprotect. 2 March 2016, Stuttgart.
39. Farleigh * L, Rohan Narayan, Daniela Friese, Ed Sayers, Arwyn T Jones, Christopher McGuigan, and Joachim J. Bugert (2016). Novel cell targeting L-ddBCNA antiviral inhibits autophagy in measles virus infected cells. 35th Annual Meeting for the American Society for Virology – June 18 to 22, 2016; Blacksburg, Virginia, U.S.A.
40. Fischer S*, Mayer-Scholl A, Essbauer S, Kratzmann N, Imholt C, Reil D, Heuser E, Schmidt S, Rosenfeld UM, Jacob J, Nöckler K, Ulrich RG (2016). Survey for zoonotic bacteria: Leptospira and Rickettsia in wild

small mammal populations in Germany. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich.

41. Flach B*, Knuepfer M, Baumann K, Chitimia-Dobler l, Ntinginya NE, Maboko L, Heinrich N, Dobler G. (2016). First molecular detection of Rickettsia massiliae in Ticks from Tanzania. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich.
42. Flach B*, Knüpfer M, Baumann K, Nurtsch M, Maboko L, Heinrich N, Hölscher M, Dobler G, Chitimia-Dobler L (2016). Vorkommen von Zeckenarten an Rindern in Mbyea, Südwest-Tansania. 3. Süddeutscher Zeckenkongress. Hohenheim 14 to 16 March 2016.
43. Flach* B, M Knüpfer, K Baumann, L Chitima-Dobler, NE Ntinginya, L Maboko, N Heinrich, M Hölscher, G Dobler (2016). First Molecular Detection of Rickettsia massiliae in Ticks from Tanzania. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich
44. Frangoulidis* D & Walter MC (2016). Recent advances in whole genome sequencing of Coxiella burnetii. MedVetNet sponsored Symposium: Current findings in Q fever. 19 to 20 April 2016, Brussels, Belgium
45. Frangoulidis* D & Walter MC (2016). The Pangenome and Variome of Coxiella burnetii. 28th Meeting of the American Society for Rickettsiology. 11 to 14 June 2016, Big Sky, Montana, USA
46. Frangoulidis* D (2016). Infektiologische Aspekte für polizeiliche Ersthelfer. Combat Medical Care Conference, 30 June 2016, Neu-Ulm.
47. Frangoulidis* D (2016). Isolation Unit at the Bundeswehr Hospital Berlin. 38th Meeting of the Biological Medical Defence Expert Panel (BioMed-P), Prag, 14 to 16 September 2016
48. Gamkrelidze* A, Imnadze P, Wölfel R (2016). German-Georgian Collaboration for Global Health Security, 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich
49. Genzel* GH (2016): Briefing on Biosampling & Field-Laboratory Analysis MPC NATO EX Precise Response 2017, 6 to 8 December 2016, Copenhagen, Denmark
50. Genzel* GH (2016): Briefing on DEU Bio-Medical Laboratory. NATO Exercise Precise Response, 13 July 2016, Suffield, Canada,
51. Genzel* GH (2016): Medical Bio Reconnaissance Capabilities in the German armed forces. CBRN: FIRST RESPONSE 2016, 26 to 28 January 2016, Bristol, UK
52. Genzel* GH (2016): Report on Activities of the DEU Bio-Medical Reconnaissance & Verification Unit. NATO JCBRN - CDG DIMP Meeting 2016-I, 24 to 27 May 2016, Copenhagen, Denmark
53. Genzel* GH (2016): Report on DEU RDOIT Mission in Prizren, KOSOVO. BioMed Panel, 25 to 26 May 2016, Munich
54. Georgi* E, Northoff BH, Pfalzgraf M-T, Scholz HC, Holdt LM, Walter MC, Zange S, Antwerpen MH (2016) Tracing the geographical origin of human brucellosis in Germany. National Symposium on Zoonoses Research. 13 to 14 October 2016, Berlin
55. Georgi* E, Wernery U,, Wernery R, Scholz HC. (2016) Insights into microevolution of Burkholderia mallei gained during an experimental infection within its natural host. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich, Germany
56. Grass G (2016) Thirteen years of injectional anthrax in drug consumers, 23 February 2016, Technische Universität Braunschweig, Braunschweig.
57. Grass* G (2016) Unexpected genomic relationships between Bacillus anthracis strains from Bangladesh and Central Europe. The Biology of Anthrax Conference 12 to 15 November 2016, Tampa, Florida (USA)
58. Grass* G (2016). Microevolution of anthrax from a young ancestor (m.a.y.a.) suggests a soil-borne life cycle of Bacillus anthracis, International Scientific-and-Practical Conference “problems of emergent animal diseases: molecular epizootology, express-diagnosis and biosafety”, 07 June 2016, Odessa, Ukraine
59. Grass* G (2016) Inaktivierung von Sporen und Sporenbildnern, BSL-3-Workshop ”Fachkundige Person“, 23 February 2016, Helmholtz Institut für Infektionsforschung, Braunschweig.

60. Heinemann P, Witkowski PT, Essbauer S, Krüger N, Akoua-Koffic CG, Schaumburg F, Leendertz FH, Krüger DH* (2016). Human infections by non-rodent associated hantaviruses in Africa. 26th Annual Meeting of the Society for Virology. 6 to 9 April 2016, Münster.

61. Heuser E, Fischer S, Ryll R, Mayer-Scholl A, Hoffmann D, Spahr C, Imholt C, Johne R, Ehlers B, Essbauer S, Nöckler K, Ulrich RG* (2016): Network "Rat-borne pathogens": Searching for pathogen co-infections. 24 to 26 November 2016 Annual DZIF Meeting, Köln.

62. Jashiashvili* T, Sukhiashvili R, Thumann S, Strehle M, Wölfel R, Imnadze P (2016). Tick-borne Encephalitis virus (TBEV) investigation in Georgia, 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

63. Kouriba* B, B Traoré, L Timbiné, A Maiga, A Touré, M Knüpfer, E Fleischmann, S Thumann, L Fofona, F Xavier, M Summerer, J Von Bonin, S Diallo, R Wölfel (2016). Mobile laboratory unit for the fight against Ebola in Mali. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

64. Lindau* A, Oehme R, Dobler G, Mackenstedt U (2016). FSME-Standorte Emmendingen, Bottnang, Schramberg: Nachweis von FSME-Erregern in Zecken. 3. Süddeutscher Zeckenkongress. Hohenheim 14 to 16 March 2016.

65. Mangu CD*, Msila HB, Flach B, Baumann K, Maboko L, Dobler G, Heinrich N. (2016). Epidemiology and surveillance of arhroppod-borne diseases in febrile patients in Southwestern Tanzania. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich.

66. Mantel* S, Aistleitner K, Stoecker K, Wölfel R (2016). A comparison of fluorescence in situ hybridization and quantitative RT-PCR for the detection of Bacillus anthracis, Francisella tularensis and Yersinia pestis, 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

67. Mauldin* M, Emmerson G, Li Y, Antwerpen A, Zoeller G, Carroll and H Meyer (2016). Cowpox virus: What´s in a name? XXI International Poxvirus, Asfarvirus and Iridovirus Conference. 1 to 6 July 2016, Strassbourg, France

68. Meyer* H (2016). Gefährdungsbeurteilung von Arbeitsplätzen im Diagnostiklabor. BSL-4-Workshop "Fachkundige Person", 14 April 2016, Hamburg

69. Pajer P, J Dresler, D Elleder, H Kabickova, L Pisa, P Aganov, V Kuzelka, P Veleminsky, J Klimentova, A Fucikova, J Peichal, V Benes, T Raush, P Dundr, A Pilin, A Cabala, M Hubalek, J Stribrny, K Fucik, M Antwerpen, and H Meyer* (2016). Unique genome of a European variola virus identified in a 100 year-old preserved tissue. Medical Biodefense Conference, , 26 to 29 April 2016, Munich.

70. Puff* C, N. Jungwirth, K. Köster, R. Mischke, H. Meyer, A. Stark, B. Thoma, G. Zöller F. Seehusen, M. Hewicker-Trautwein, P. Wohlsein, und W. Baumgärtner (2016). Ungewöhnliche Häufung von Kuhpockenfällen bei Katzen. DVG-Tagung der Fachgruppe Pathologie, 4 to 6 March 2016, Fulda

71. Radosa L, Witkowski PT, Ličková M, Szemeš T, Essbauer S, Ulrich RG, Laenen L, Maes P, Krüger DH, Klempa B* (2016). Occurrence of Shrew- and Mole-Borne Hantaviruses in Germany. Hantavirus Congress. 31 May to 3 June 2016, Colorado State University, Fort Collins, USA.

72. Randall* LB, Georgi E, Genzel GH, Schweizer HP (2016) Finafloxacin Evades Burkholderia pseudomallei Efflux-mediated Fluoroqinolone Resistance. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

73. Stoecker K* and Wölfel R. (2016). EVIDENT: Final Results of the Workpackage 2. EVIDENT Meeting, 5 October 2016, Crete, Greece.

74. Stoecker K* and Wölfel R. (2016). EVIDENT: Results of the Workpackage 2. EVIDENT Meeting, 22 January 2016, Oxford, UK.

75. Stoecker K*, Genzel, G. and Wölfel R. (2016). Mobile Laboratories - Lessons-learned during the Ebola Outbreak. NATO course on Management of Infectious Diseases during Missions (MIDDM), 12 October 2016, Hamburg.

76. Stoecker K.*, Wölfel R, & EMLab Consortium (2016). Lessons learned from the European Mobile Laboratory Deployment. CBRNe Europe, 24 February 2016; Amsterdam

77. Stoecker* K, Gabriel M, Fleischmann E, DiCaro A, Ippolito G, Günther S, Wölfel R (2016). Mobile Laboratories - Lessons-learned during the Ebola Outbreak, 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

78. Stoecker, K* (2016). Mobile Laboratories - Lessons-learned during the Ebola Outbreak. Biopolitics: Social, Political and Ethical Aspects of Life Science Economies. Seminar. 20 June 2016

79. Stoecker K* and Genzel G. (2016). The RDOIT capacities of the German Medical Service. Ramstein Airbase. Smart Defence Project 2.96 (1.45) on Bio Responsiveness, 04 August 2016,

80. Tserennorov D*, Höper D, Binder K, Zinner J, Dobler G, Baigalmaa B, Uyanga B, Scholz H, Riehm J, Kiefer D, Essbauer S, Frey S. (2016). Epidemiological and molecular characterization of TBEV in Mongolia. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich.

81. Turebekov N*, Shapiyeva Z, Yegemberdiyeva R, Yeraliyeva L, Dmitrovskiy A, Abdiyeva K, Oradova A, Amirbekov A, Kachiyeva Z, Ziyadina L, Höper D, Zhalmagambetova A, Fröschl G, Zinner J, Frey S, Essbauer S (2016). Almaty region as a melting pot for human pathogenic Rickettsiae in Kazakhstan. Congress at Omsk Scientific Research Institute for Natural Foci. 15 to 16 November 2016, Omsk, Russia.

82. Turebekov N*, Shapiyeva Z, Yeraliyeva L, Dmitrovskiy A, Yegemberdiyeva R, Abdiyeva K, Oradova A, Amirbekov A, Kachiyeva Z, Ziyadina L, Höper D, Zhalmagambetova A, Frey S, Zinner J, Essbauer S (2016). Southern Kazakhstan as a melting pot for human pathogenic Rickettsiae. Meeting of the German-Kazakh Network on highly infectious agents. 25 April 2016, Munich.

83. Turebekov N*, Shapiyeva Z, Yeraliyeva L, Dmitrovskiy A, Yegemberdiyeva R, Abdiyeva K, Oradova A, Amirbekov A, Kachiyeva Z, Ziyadina L, Höper D, Zhalmagambetova A, Frey S, Zinner J, Essbauer S (2016). Southern Kazakhstan as a melting pot for human pathogenic Rickettsiae. 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich.

84. Weiß* AW, Vollmar P, von Buttlar H, Wölfel R, Hanczaruk MA. Ricin vs. Abrin – or how to distinguish twins? 15th Medical Biodefense Conference, 26 to 29 April 2016, Munich

85. Wilmaerts L*, Cochez C, Neubauerova V, Marie J-L, Binder A, Schotte U, Faulde M, Essbauer S, Lista F, Faggioni G, Popescu D, Zerjav A, Ward-Demo P, Vandenvelde C, Heyman P (2016). NATO working group HFM RTG 230: “Development of depository of fast and reliable detection methods for zoonotic and vector-borne agents”. 15th Medical Biodefense Conference 2016, 26 to 29 April 2016, Munich.

86. Wölfel* R (2016). Biosicherheit und Nichtverbreitung im vernetzten Ansatz - Gemeinsamen Umsetzung der Ertüchtigungsinitiative, Informationsveranstaltung Rüstungskontrolle, 24 to 25 Oktober 2016, Berlin

87. Wölfel* R, Stoecker K, Genzel GH (2016): Mikrobiologische Diagnostik im Einsatz: Entwicklung des EmLab und Einsatzbericht, Erfahrung des militärischen Feldlabores während der Ebola-Krise. Ebola: Lessons learned Workshop 7 to 9. June 2016, Soin-Hütte

88. Wölfel* R. (2016). Auftrag und Arbeit des Instituts für Mikrobiologie der Bundeswehr, Lehrgang Generalstabsanwärter National, 31 March 2016, Führungsakademie Hamburg

89. Wölfel* R. (2016). Diagnostik unter besonderen Bedingungen: Einsatz von Gloveboxen in Feldlaboren, Biostofftag des Ausschuss für Biologische Arbeitsstoffe, 19 April 2016, Berlin

90. Wölfel* R. (2016). Ebolafieber in Westafrika – Lessons learned für Deutschland, Forum Interdisziplinäre Zusammenarbeit im Gesundheitlichen Bevölkerungsschutz, Akademie für Krisenmanagement, Notfallplanung und Zivilschutz, 24 May 2016, Bad Neuenahr-Ahrweiler

91. Wölfel* R. (2016). Physical biological protection during Ebola mobile lab support - challenges, solutions and lessons-learned, 7th International Symposium on Physical Protection and Decontamination, 19 May 2016, Munster

92. Wölfel*, R (2016). The German-Georgian Partnership for Excellence in Biological and Health Security. 20th Anniversary of the National Centre for Disease Control and Public Health, 15 November 2016, Tiflis, Georgien

93. Wölfel, S*, Löscher, T, Dobler, G, Wölfel, R. (2016). Development of a sensitive and specific real-time RT-PCR for simultaneous detection of Dengue and Zika virus infections. Medical Biodefense Conference, 26 to 29 April 2016, Munich.

94. Wölfel, S*, Löscher, T, Dobler, G, Wölfel, R. (2016). Development of a sensitive and specific real-time RT-PCR for simultaneous detection of Dengue and Zika virus infections. KIT 2016, 15 to 18 June 2016, Wuerzburg, Germany.

95. Zange* S (2016) Antimicrobial susceptibility testing (AST) of highly pathogenic bacteria; results and continuation of AST Working Group (Joint Action QUANDHIP) activities. EMERGE Kick-off Meeting, 11 to 12 January 2016, Berlin

96. Zange* S, Bolton P, Boskani T, Ezpeleta G, Georgi E, Grunow R, Jureen P, Papaparaskevas J, Telleria O, Thoma BR, Tsakris A, Wahab T and Jacob D (2016). Interlaboratory validation for antimicrobial susceptibility testing of highly pathogenic bacteria – results of the QUANDHIP AST working group. Medical Biodefense Conference, 26 to 29 April 2016, Munich

97. Zange* S, Tscherne A (2016) EMERGE- AST - general introduction and results of the first EQA. EMERGE 2nd Meeting of General Assembly, 10 to 12 October 2016, Thessaloniki, Greece

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 immunodiagnostics 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 2018

Arranging organization	Bundeswehr Institute of Microbiology
Time	24 – 27 April 2018
Place	Munich
Main subjects	1. Bioforensics 2. Diagnostics and therapeutics 3. Epidemiology and Surveillance 4. Outbreak investigation and management of highly contagious patients 5. 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

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` N, 10°08` E)

3. Floor area of microbiological laboratory areas by containment level:

BSL 2	520 m²
BSL 3 stationary laboratories	360 m²
BSL 3 containment (vehicle bound)	6 m²
BSL 4	----- m²
Total Laboratory Floor Area	886 m²

4. The organisational structure of the facility:
   The workload of the Biological Departments of the facility is approx. 90 % in B-defence and approx. 10 % 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: 41
   II) Division of personnel
      - Military 0
      - civilian 41
   III) Division of personnel by category
      - Scientists 11
      - Engineers 10
      - Technicians 20
   IV) Represented scientific disciplines:
      Biology, biochemistry, immunology, molecular biology, bacteriology, mycology, virology, toxicology, toxinology, biotechnology, environmental toxicology, aerosol biology, disinfection, drinking water treatment, waste water treatment, water supply, environmental engineering, mechanical engineering, water microbiology

   V) Contractor staff: 03
   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 personnel, consumable items and equipment in 2016 was approx. 2.4 million Euro.

- Research 40 %
- Development 30 %
- Test and Evaluation 30 %

VIII) Publication policy

Results will be published in reports to the Federal Office of Equipment, IT and In-Service Support. They will also be presented in public scientific journals and in national and inter national scientific meetings and symposiums.

IX) Lists of public available books, papers and reports resulting from the work during the previous 12 months:

Posters

1. Moritz, J.; Fiebing, S.; Reifer, E., „High Performance for Life Support in Mission: Potable Water" *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, Germany, 7 to 9 June 2016
2. Moritz, J.; Fiebing, S.; Reifer, E., „Qualification of a Mobile CBRN Water Treatment Plant" *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, Germany, 7 to 9 June 2016
3. Moritz, J.; Fiebing, S.; Reifer, E., „The Target Is Clear…Recent R&T Activities of the Water Treatment Branch" *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, 7 to 9 June 2016
4. Friederichs, R.; Zappe, D.; Reifer, E., „NBC detection kit water" *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, Germany, 7 to 9 June 2016
5. T. Meißner and B. Huelseweh: Analysis of OPCW relevant toxins, April 2016, Medical Biological Defence Conference, Munich
6. C. Erdmann and B. Huelseweh: Simultaneous identification of Biological Warfare agents with the BioPlex200®-System, April 2016, Medical Biological Defence Conference, Munich
7. A. Kostevic, T. Meißner and B. Huelseweh: Decontamination control of chemical warfare agents (CWA) by using protein biomarkers, April 2016, Medical Biological Defence Conference, Munich
8. Behrens-Gütschow, C.; Haverland, F; Köhne, S. „Testinfrastruktur zur Bewertung des Leistungsspektrums von B-Detektionssystemen", Biostofftag, Berlin, 19 April 2016
9. Kruse, M.; Winkler, M.; Schirmer, S.; Niederwöhrmeier, B., "Living and non-living bacteria", SPICED Symposium, Berlin, Deutschland, 1 to 2 June 2016
10. Kruse, M.; Winkler, M.; Schirmer, S.; Niederwöhrmeier, B., "Effects on the structure of the proteins ricin and SEB", SPICED Symposium, Berlin, 1 to 2 June 2016
11. Kruse, M.; Schirmer, S.; Niederwöhrmeier, B., "Identification of biological warfare agents as contaminates in spices and herbs", SPICED Symposium, 1 to 2 June 2016
12. Köhne, S.; Schirmer, S.; Haverland, F.; Behrens-Gütschow, C.; Rudolph, I.; Schache, C., „B-Detektion für den Einsatz", Tag der Bundeswehr, Munster, 11 June 2016
13. Schache, C.; Köhne, S.; Wolpert, E.; Gläser, U.; Rottländer, S.; Breitfuss, U., „Machbarkeitsstudie ABC-U, mobil – Anteil B-Labor", Tag der Bundeswehr, Munster, 11 June 2016

14. Schache, C.; Köhne, S., „Gesetzliche Rahmenbedingungen für den Umgang mit B-Agenzien der Risikogruppe 3 und höher“, Tag der Bundeswehr, Munster, 11 June 2016

15. Schache, C.; Köhne, S., „Feldfähige Hochsicherheits-Infrastruktur“, Tag der Bundeswehr, Munster, 11 June 2016

Lectures

1. Reifer, E., „WIS – Our Contribution to Mobile Water Supply in Operations“ 1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, 8 June 2016

2. Moritz, J., „Existing and Missing Standards for Water Treatment – Results from EDA EG 22” *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, Germany, 8 June 2016

3. Fiebing, S., „Water Treatment Equipment for Decontamination Purposes (WAA Dekon) – Summer/Winter Test” *1st International Symposium on Mobile Water Supply in Operations: Research and Field Experience*, Bundeswehr Research Institute for Protective Technologies and NBC Protection; Federal Academy of Education and Training in the Bundeswehr; Bundeswehr CBRN Defence Battalion 7, Munster, Germany, 9 June 2016

Master theses and doctoral theses

1. Kostevic, Master theses: Etablierung eines wirkungsbezogenen Direktnachweises von chemischen Toxinen mittels Proteinbiomarker. Leibniz Universität Hannover, Naturwissenschaftlichen Fakultät, Fach Chemie, June 2016

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 Bundeswehr capability gaps in B-defense. 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 automatization 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, automatization).

e. Sample concentration and preparation incl. inactivation for identification in different matrices.

f. Efficient sample processing and risk mitigation method for both ensuring safe handling and preparation of the 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 for simultaneous, parallel and/or successive 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. Risk assessment Improvised Explosive Devices (IED) plus B-agents.

i. Development of procedures for disinfection and decontamination.

j. B-Agents and toxin laboratory analysis of suspect samples.

k. Toxin preparation and analytics.

l. Participation in round-robin exercises.

m. Nanotechnology for materials like clothes, paints, etc.

n. Evaluation of B removal efficiency of water treatment equipment.

o. Development and evaluation of mobile equipment for B monitoring of the water supply chain.

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

Outdoor studies were performed for biological aerosols detection and water-purification tests using biowarfare agent simulants like *Bacillus atrophaeus, E. coli and phages*.

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: 5 (6 until April 2016)
   - II) Division of personnel
     - Military 2 (3 until April 2016)
     - Civilian 3
   - III) Division of personnel by category
     - Scientists 2 (3 until April 2016)
     - Technicians 3
   - IV) Represented scientific disciplines:
     Veterinary medicine, microbiology, virology, bacteriology, parasitology, molecular biology, immunology
   - V) Contractor staff: 0 (1 until April 2016)
   - VI) Source of funding:
     Federal Ministry of Defence
   - VII) Funding levels for the following program areas:
     The funding for consumable items and equipment in 2016 was approx. 0.186 million Euro.
     - Development 20 %
     - Test and Evaluation 25 %
     - Diagnosis 50 %
     - 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 months (To include authors, titles and full references):

1. Trojnar, E., Szabo, K., Anheyer-Behmenburg, H., Binder, A., Schotte, U., Ellerbroek, L., Klein, G., Johne, 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. Schotte, U., Anheyer-Behmenburg, H., Binder, A., Blome, S., Klein, G.: Wildtiere als Reservoir und Sentinels für Tierseuchen- und Zoonoseerreger. Wehrmed. Mschr. 6/2016, 187-190
3. Anheyer-Behmenburg, H., K. Szabo, U. Schotte, A. Binder, G. Klein, R. Johne: Hepatitis E Virus in Wild Boars and Spillover Infection in Red and Roe Deer, Germany, 2013-2015. Emerg Infect Dis. accepted Dec 2016
4. Wilmaerts, L., Cochez, Neubauerova, V., Marie, J.-L., Binder, A., Essbauer, S., Schotte, U., Faggioni, G., Malacea, D., Zerjav, A., Ward-Demo, P., Heyman, P.: NATO working group HFM RTG 230: "Development of depository of fast and reliable detection methods for zoonotic and vector-borne agents". 47. Kongress der Deutschen Gesellschaft für Wehrmedizin & Wehrpharmazie e. V. (DGWMP) Ulm
5. Schotte, U., Anheyer-Behmenburg, H., Binder, A., Blome, S., Klein, G.: Monitoring programs for infectious diseases in wildlife to enhance diagnostic capabilities in mission. 3rd Force Health Protection Congress Hamburg
6. Wilmaerts, L., Cochez, Neubauerova, V., Marie, J.-L., Binder, A., Essbauer, S., Schotte, U., Faggioni, G., Malacea, D., Zerjav, A., Ward-Demo, P., Heyman, P.: NATO working group HFM RTG 230: "Development of depository of fast and reliable detection methods for zoonotic and vector-borne agents". COMEDS Meeting 2016
7. Schotte, U.: Wild animals as reservoir and sentinel for vector borne and zoonotic diseases. 62nd International Military Veterinary Medical Symposium, Garmisch-Partenkirchen
8. Wilmaerts, L., Cochez, Neubauerova, V., Marie, J.-L., Binder, A., Essbauer, S., Schotte, U., Faggioni, G., Malacea, D., Zerjav, A., Ward-Demo, P., Heyman, P.: NATO working group HFM RTG 230: "Development of depository of fast and reliable detection methods for zoonotic and vector-borne agents". 15th Medical Biodefense Conference 2016
9. Anheyer-Behmenburg, H., Schotte, U., Binder, A., Szabo, K., Johne, R., Klein, G.: Virale Zoonoseerreger beim Tier – „Ist uns das Wurst?" Seminar Veterinary Public Health „Zoonosen in der Lebensmittelkette - Vorkommen und reale Risiken"; Stiftung Tierärztliche Hochschule Hannover

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
   d. Diagnosis of infectious animal diseases, especially Swine Fever and Babesiosis
   e. Diagnosis of food and waterborne threats, i.e. *Vibrio cholerae* and Norovirus
   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 have been conducted.

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 ABC-Abwehr und Gesetzliche Schutzaufgaben
   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:
   The workload of the Biology Section of the facility is divided into approx. 50 % Bio-defence related work (no basic research), 30 % provision of basic scientific training and 20 % environmental protection courses.

   I) Total Number of personnel: 12
   II) Division of personnel
   - Civilian 3
   - Military 9

   III) Division of personnel by category
   - Scientists 2
   - Physician 1
   - Engineers 2
   - Technicians 7

   IV) Represented scientific disciplines:
   Medical entomology and parasitology, toxinology, microbiology, molecular biology

   V) Contractor staff: 0

   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 2016 was approx. 0.08 Mio Euro.

   - Development of methods for detection 30 %
   - Test and evaluations 20 %
   - Education and Training 50 %

   VIII) Publication policy

Results will be published primarily in reports to the Federal Office for Military Technology and Procurement 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 have been conducted.

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 2015, a new laboratory building – including BSL4-laboratory space – was inaugurated. Technical evaluations were carried out in 2016; work on pathogens – including risk group 4 pathogens – is expected to start in 2017.)

4. The organizational structure of each facility.
   (i) Total number of personnel: 125
   (ii) Division of personnel:
   - Military: 0
   - Civilian: 125

   (iii) Division of personnel by category:
   - Scientists: 73
   - Engineers: 1
   - Technicians: 44
   - Administrative and support staff: 7

   (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.
   38 of the 125 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, Federal Chancellery, 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, European Commission, Organisation for the Prohibition of Chemical Weapons, World Health Organisation, foreign governmental agencies, industry.
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 2016 was approximately 8.3 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. Aerssens A, Cochez C, Niedrig M et al. (2016): Analysis of delayed TBE-vaccine booster after primary vaccination. J. Travel Med. 23 (2): pii: tav020.
2. Aghaie A, Aaskov J, Chinikar S, Niedrig M et al. (2016): Frequency of West Nile virus infection in Iranian blood donors. Indian J. Hematol. Blood Transfus. 32 (3): 343–346.
3. Albac S, Schmitz A, Lopez-Alayon C, d'Enfert C, Sautour M, Ducreux A, Labruère-Chazal C, Laue M, Holland G et al. (2016): *Candida albicans* is able to use M cells as a portal of entry across the intestinal barrier in vitro. Cell. Microbiol. 18 (2): 195–210.
4. Antonation KS, Grützmacher K, Dupke S, Mabon P, Zimmermann F, Lankester F, Peller T, Feistner A, Todd A, Herbinger I, de Nys HM, Muyembe-Tamfun JJ, Karhemere S, Wittig RM, Couacy-Hymann E, Grunow R, Calvignac-Spencer S, Corbett CR, Klee SR, Leendertz FH (2016): *Bacillus cereus* biovar *anthracis* causing anthrax in sub-Saharan Africa – chromosomal monophyly and broad geographic distribution. PLoS Negl. Trop. Dis. 10 (9): e0004923.
5. Becker S, Lochau P, Jacob D, Heuner K, Grunow R (2016): Successful re-evaluation of broth medium T for growth of *Francisella tularensis* ssp. and other highly pathogenic bacteria. J. Microbiol. Methods 121: 5–7.
6. Beekes M, Thomzig A (2016): Sterilization techniques: Counter the risk of Alzheimer's transfer. Nature 531 (7596): 580.
7. Brinkmann A, Nitsche A, Kohl C (2016): Viral metagenomics on blood-feeding arthropods as a tool for human disease surveillance. Int. J. Mol. Sci. 17 (10): 1743.
8. Buchholz U, Haußig J, Prahm K, Nitsche A, Targosz A, Engelhart S (2016): 7.1 GrippeWeb und GrippeWeb-Plus Machbarkeitsstudie. In: Robert Koch-Institut (Hrsg), Bericht zur Epidemiologie der Influenza in Deutschland, Saison 2015/16. Berlin: Robert Koch-Institut, pp. 65–71.
9. 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. (2016): Dilemmas in managing pregnant women with Ebola: 2 case reports. Clin. Infect. Dis. 62 (7): 903–905.

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11. Clarke E, Saidu Y, Adetifa JU, Adigweme I, Hydara MB, Bashorun AO, Moneke-Anyanwoke N, Umesi A, Roberts E, Cham PM, Okoye ME, Brown KE, Niedrig M, Roy Chowdhury P et al. (2016): Safety and immunogenicity of inactivated poliovirus vaccine when given with measles-rubella combined vaccine and yellow fever vaccine and when given via different administration routes: a phase 4, randomised, non-inferiority trial in The Gambia. Lancet Glob. Health 4 (8): e534–e547.
12. Daus ML (2016): Disease transmission by misfolded prion-protein isoforms, prion-like amyloids, functional amyloids and the central dogma. Biology 5 (1): 2.
13. Dieckmann R, Hammerl JA, Hahmann H, Wicke A, Kleta S, Dabrowski PW, Nitsche A, Stämmler M, Al Dahouk S, Lasch P (2016): Rapid characterisation of *Klebsiella oxytoca* isolates from contaminated liquid hand soap using mass spectrometry, FTIR and Raman spectroscopy. Faraday Discuss. 187: 353–375.
14. Dorner BG, Zeleny R et al. (2016): Biological toxins of potential bioterrorism risk: Current status of detection and identification technology. Trends Analyt. Chem. 85: 89–102.
15. Dupke S, Akinsinde KA, Grunow R, Iwalokun BA, Olukoya DK, Oluwadun A, Velavan TP, Jacob D (2016): Characterization of *Vibrio cholerae* strains isolated from the Nigerian cholera outbreak in 2010. J. Clin. Microbiol. 54 (10): 2618–2621.
16. Eisenreich W, Heuner K (2016): The life stage-specific pathometabolism of *Legionella pneumophila*. FEBS Lett. 590 (21): 3868–3886.
17. Ergünay K, Litzba N, Brinkmann A, Günay F, Kar S, Öter K, Örsten S, Sarıkaya Y, Alten B, Nitsche A, Linton YM (2016): Isolation and genomic characterization of *Culex theileri* flaviviruses in field-collected mosquitoes from Turkey. Infect. Genet. Evol. 6: 138–147.
18. Fercher C, Probst I, Kohler V, Goessweiner-Mohr N, Arends K et al. (2016): VirB8-like protein TraH is crucial for DNA transfer in *Enterococcus faecalis*. Sci. Rep. 6: 24643.
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22. Goyer M, Loiselet A, Bon F, L'Ollivier C, Laue M, Holland G et al. (2016): Intestinal cell tight junctions limit invasion of *Candida albicans* through active penetration and endocytosis in the early stages of the interaction of the fungus with the intestinal barrier. PLoS One 11 (3): e0149159.
23. Grunow R, Jacob D, Klee S et al. (2016): Brucellosis in a refugee who migrated from Syria to Germany and lessons learnt, 2016. Euro Surveill. 21 (31): pii=30311.
24. 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. (2016): Human Immunodeficiency Virus (HIV). Transfus. Med. Hemother. 43 (3): 203–222.
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5. Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms[1] 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 **Unit 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 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/

ZBS2, the **Unit for Highly Pathogenic Microorganisms**, is responsible for the organisation of the diagnostics of samples with bioterrorism suspicion within ZBS, for the development and

[1] Including viruses and prions.

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 (EMERGE) 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 *Legionella* research , 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 unit is running a BSL 3 laboratory. More information can be obtained using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs2/zbs2_node.html

ZBS3, the **Unit 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 decontamination, for contribution to the development of standard therapies, and for characterisation of adherence/colonisation factors in toxin-producing and tissue-damaging bacteria. Moreover, ZBS3 hosts the national Consultant Laboratory for Neurotoxin-producing *Clostridia* (botulism, tetanus). More information can be obtained using the following links:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs3/zbs3_node.html
http://www.rki.de/DE/Content/Infekt/NRZ/Konsiliar/Clostridium_botulinum/Neurotoxin_produzierende_Clostridien.html?nn=2371378 (in German).

ZBS4, the **Unit 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 **Unit for Biosafety Level 4 Laboratory**, is responsible for planning, setting up and later 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 using the following link:
http://www.rki.de/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/zbs5/zbs5_node.html

ZBS6, the **Unit 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 using the following link:
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/DE/Content/Infekt/Diagnostik_Speziallabore/speziallabore_node.html (in German).

The list contains abrin (*Abrus precatorius*), *Bacillus anthracis*, *Brucella spp.*, *Burkholderia mallei* and *pseudomallei*, neurotoxin-producing *Clostridium spp. (C. baratii, C. botulinum*, *C. butyricum, C. tetani*), *Coxiella burnetii*, *Francisella tularensis*, ricin (*Ricinus communis*), staphylococcal enterotoxins A and B (*Staphylococcus aureus), Vibrio cholera*, *Yersinia pestis*, and a number of viruses, e.g. dengue virus, FSME virus, Variola and other pox viruses, Venezuelan equine encephalomyelitis virus, viral haemorrhagic fever viruses, and yellow fever virus. 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

Human 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

Lassafever cases February/March 2016
In late February 2016, a patient suffering unrecognized from Lassa fever was airlifted from Togo to Germany for emergency medical treatment. The patient passed away only hours after arrival with multi-organ failure. Analysis of autopsy materials was suggestive of a hemorrhagic fever, and Lassa fever diagnosis was confirmed on 9 March 2016 at the Bernhard Nocht Institute for Tropical Medicine in Hamburg, Germany. A secondary case occurred in a funeral home employee who handled the primary case's corpse before the suspicion of a hemorrhagic fever had been raised. The mortician is reported to have worn gloves and does not recall being exposed to bodily fluids. Lassa fever infection in the secondary patient was confirmed by PCR on 15 March 2016. The patient was treated in a special isolation unit in Frankfurt and survived. There were no further cases among the two cases' contacts.
More information can be obtained using the following link: *http://www.who.int/csr/don/23-march-2016-lassa-fever-germany/en/*

Botulism type E cases in November/December 2016
Four confirmed foodborne botulism type E cases occurred in Germany between November and December 2016. As source, commercially available salted and dried roach (*Rutilus rutilus*) was identified. This outbreak is linked to two cases of suspected foodborne botulism in Spain which occurred after the consumption of the same product (salted and dried roach), which was also distributed to Spain. Extensive recalls of the implicated food product have been undertaken since 25 November 2016. Targeted public warnings have also been issued.
More information can be obtained using the following links:
http://ecdc.europa.eu/en/press/news/_layouts/forms/News_DispForm.aspx?ID=1528&List=8db7286c-fe2d-476c-9133-18ff4cb1b568
https://www.efsa.europa.eu/de/supporting/pub/1157e

Under the OIE WAHIS/WAHID reporting system Germany in 2016 provided information about exceptional animal disease events regarding 272 outbreaks of highly pathogenic avian influenza and four 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/*

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:
Clinical trial material only, no own licenses for marketing: Tuberculosis (BCG vaccines), Smallpox (MVA), Ebola (recombinant Adeno-/MVA vaccine), Bordatella, HIV

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