

WHO Reference strains for RBC

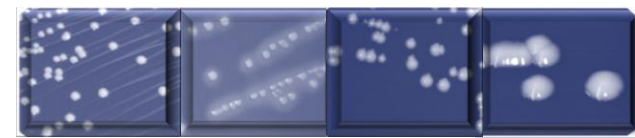
Growth kinetics of different bacterial species at low storage temperature



Eva Spindler-Raffel

**Paul Ehrlich Institut
Federal Institute for Vaccines and Biomedicines
Division Microbial Safety
Germany**

**ISBT WP Subgroup Bacteria,
Dubai, September 3rd, 2016**





WHO Reference strains for RBC

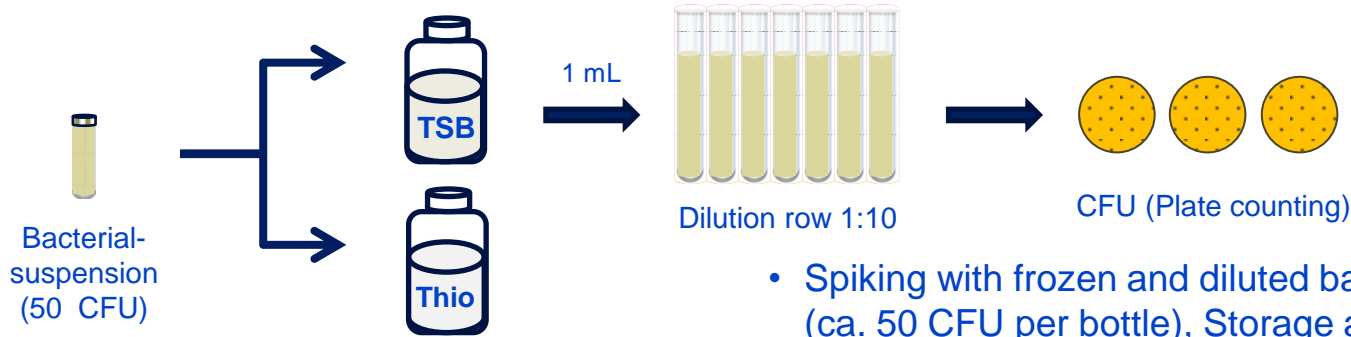


❖ Candidate strains for Red Blood Cell Concentrates

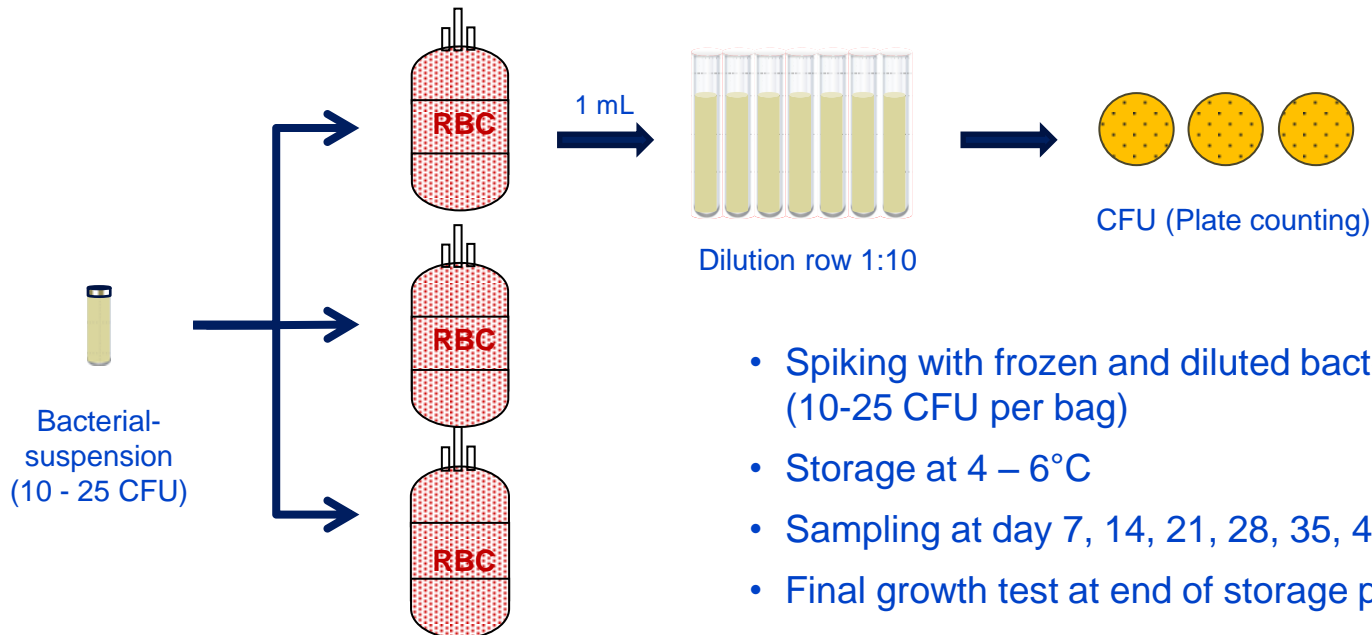
- **Test of Growth kinetics (protocol)**
- **Results**
- **Summary**



Growth Ability – protocol pretesting



- Spiking with frozen and diluted bacterial suspension (ca. 50 CFU per bottle), Storage at 4 – 6°C
- Sampling at day 7, 14, 21. Final growth test at end of storage period



- Spiking with frozen and diluted bacterial suspension (10-25 CFU per bag)
- Storage at 4 – 6°C
- Sampling at day 7, 14, 21, 28, 35, 42, 49
- Final growth test at end of storage period (BacT/Alert)



Bacterial Strains Undergoing Pretesting



Growing up to high bacterial counts	<i>P. fluorescens</i> PEI-B-P-77 <i>Y. enterocolitica</i> PEI-A-101, PEI-A-105
Persisting not growing	<i>B. thuringiensis</i> PEI-B-P-07, <i>B. cereus</i> PEI-B-P-57, <i>B. licheniformis</i> PEI-A-115 <i>S. aureus</i> PEI-A-93, PEI-A-153; <i>S. epidermidis</i> PEI-B-P-06, PEI-A-150 <i>S. pyogenes</i> PEI-B-P-20 <i>Micrococcus spp.</i> PEI-A-111 <i>K. oxytoca</i> PEI-A-117 <i>S. marcescens</i> PEI-A-144, PEI-B-P-56 <i>S. cholerasuis</i> PEI-A-104 <i>E. coli</i> PEI-S-80, PEI-A-154 <i>E. cloacae</i> PEI-A-149 <i>M. morgani</i> PEI-A-114 <i>P. aeruginosa</i> PEI-A-156, PEI-A-157 <i>A. junii</i> PEI-A-146
Not detectable	<i>S. epidermidis</i> , PEI-A-150; <i>S. warneri</i> , PEI-A-158 <i>K. pneumoniae</i> , PEI-A-103 <i>S. enterica</i> , PEI-A-97



Summary

- **Test of 27 strains**
- **The tested strains showed no difference of growth kinetics in media and RBC at storage temperature of 4° to 6°C**
- **For pretesting (influence of temperature) broth (TSB and Thio) is a suitable matrix for the strains tested so far**
- **3 strains showed real growth curves to high bacterial counts:**
 - Yersinia enterocolitica* (PEI-A-105, PEI-A-101),**
 - Pseudomonas fluorescens* (PEI-B-P-77)**
- **Strains await testing:**
 - Serratia liquefaciens*, *Listeria monocytogenes***



Acknowledgement



Courtesy strains:

Karin Janetzko, Kirsten Fischer, DRK-BSD
Mannheim

Carl P McDonald, NHS Blood and Transplant,
London, England

Sandra Ramirez-Arcos, Canadian Blood Service,
Ottawa

Julieta Rojo, Centro Nacional De La Transfusion
Sanguinea, Mexico

Masahiro Satake, Japanese Red Cross, Tokyo

Frank Sommer, Universitätsklinikum Marburg

Philipp Warnke, Universitätsmedizin Rostock

Universitätsklinikum, Basel

Section microbial safety Paul-Ehrlich-Institut, Langen, Germany

Julia Brachert

Anja Schneider

Anna Marie Grothaus

Marcel Prax

Utta Schurig

Ute Sicker

Jan-Oliver Karo

Ingo Spreitzer

and

Isabelle Bekeredjian-Ding

(head of department)

Funding:



German Ministry of health



Thank you very much for your attention

Eva Spindler-Raffel
bakteriologische-sicherheit@pei.de
www.pei.de