

the power to protect the public
from waterborne disease

Life Technologies Waterborne Pathogen Testing

Discover what the power of qPCR and rapid testing can do for you!

Jeffrey Strain, M.S.

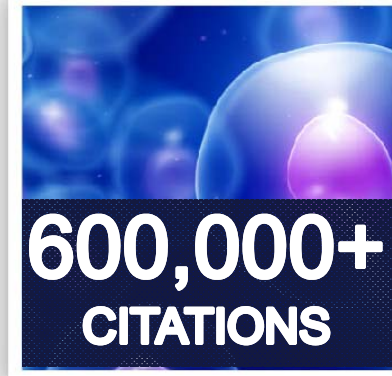
Life Technologies Applied Markets

*Animal Health, Food Safety and
Environmental Testing*

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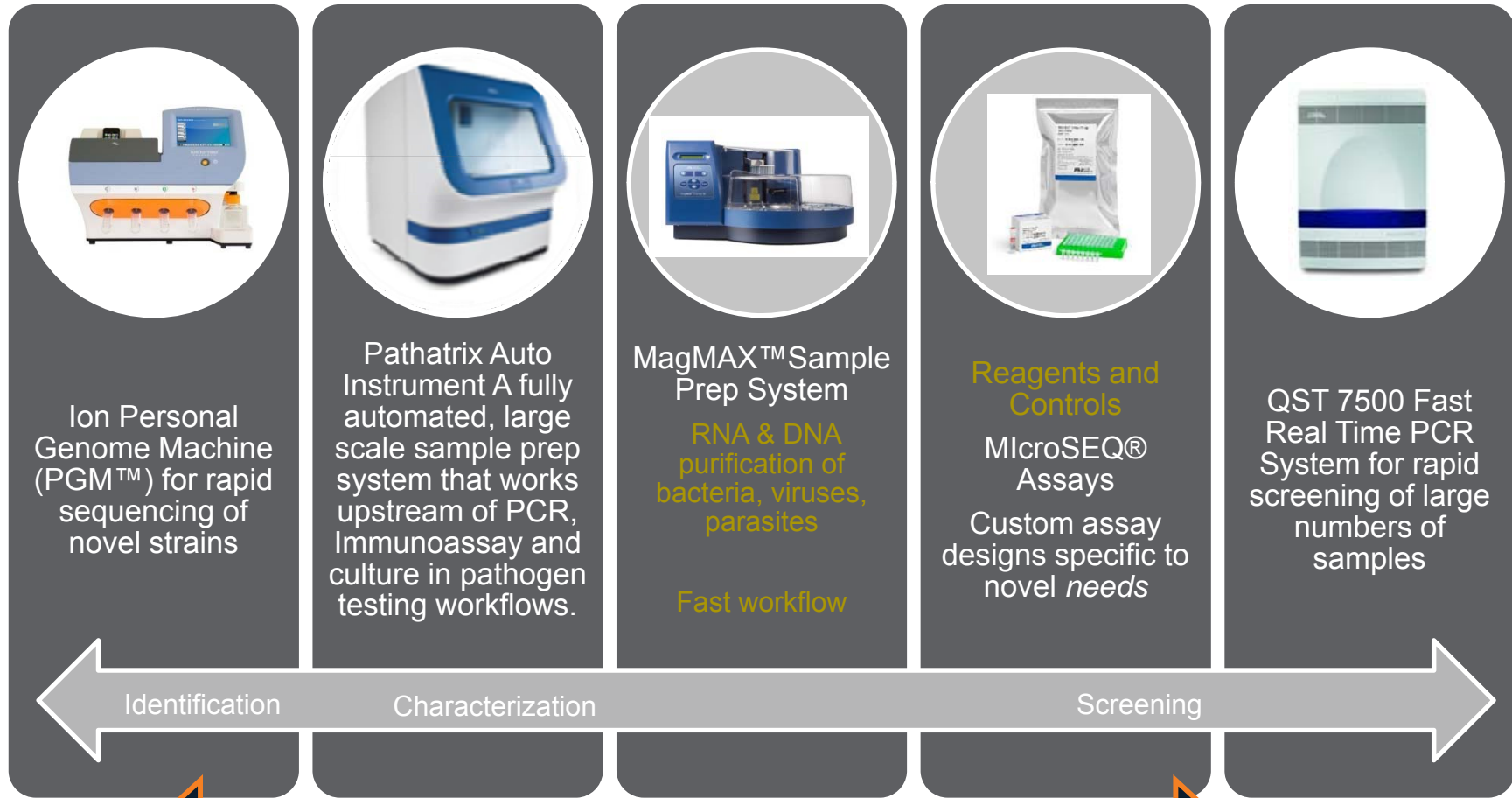
Who is Life Technologies?: Quick Facts



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Life Technologies Provides a Suite of Tools for Rapid Screening and Identification of Pathogens



Advantage for partners: one-stop shop, confidence in results, consolidated service & support, reduced costs & increased efficiency



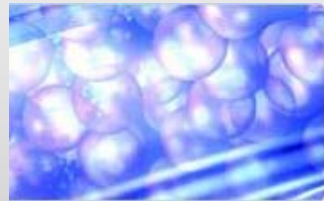
Life Technologies – Your Global Partner for Rapid Microbial Testing

Real-time PCR Assay Design



- Best in class bioinformatics
- Unmatched experience in designing and developing PCR assays

Sample Preparation



- Extensive expertise in developing sample preparation methods for a broad range of sample types

Custom Development

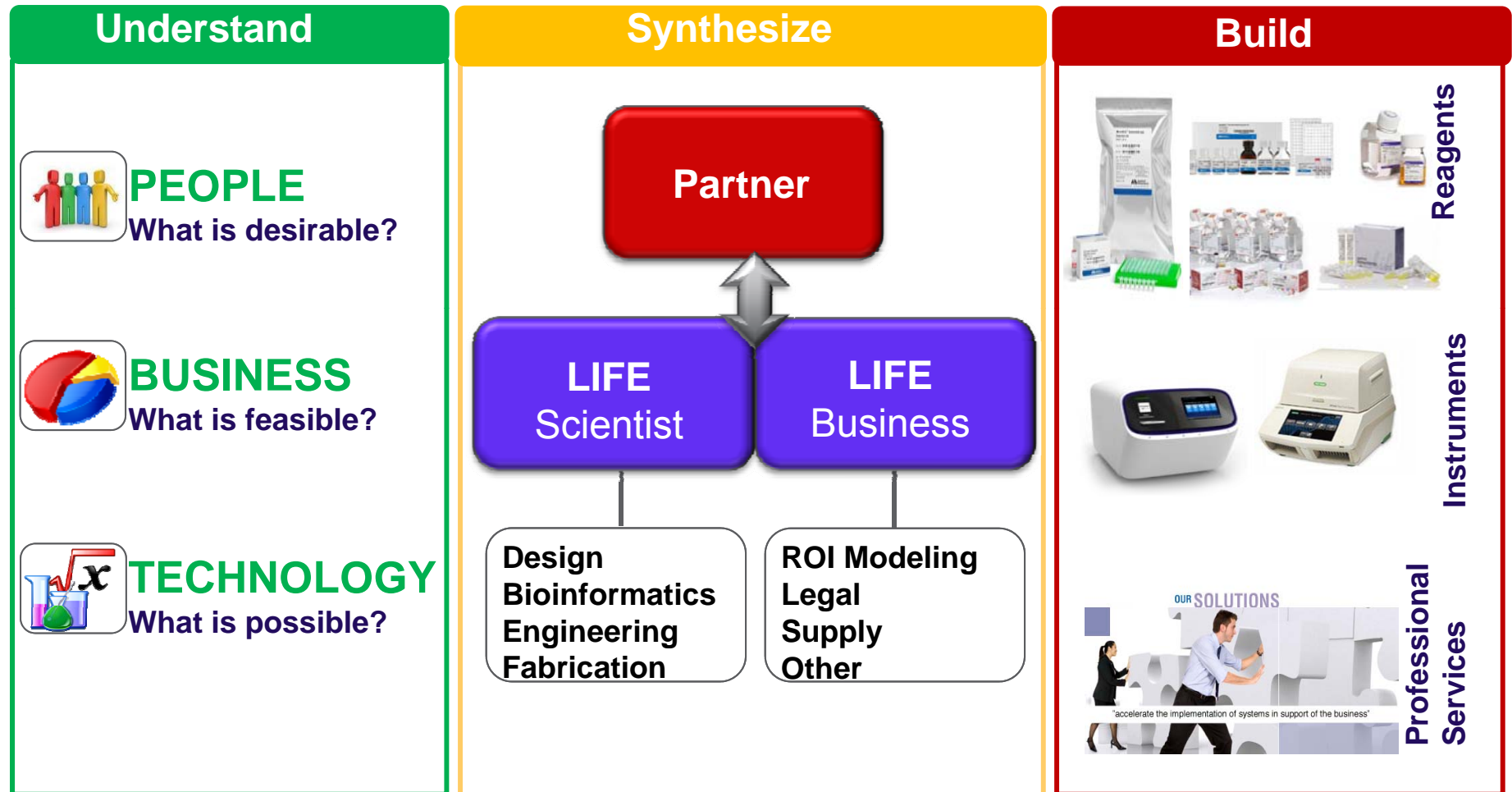


- R&D resources dedicated to being your strategic partner

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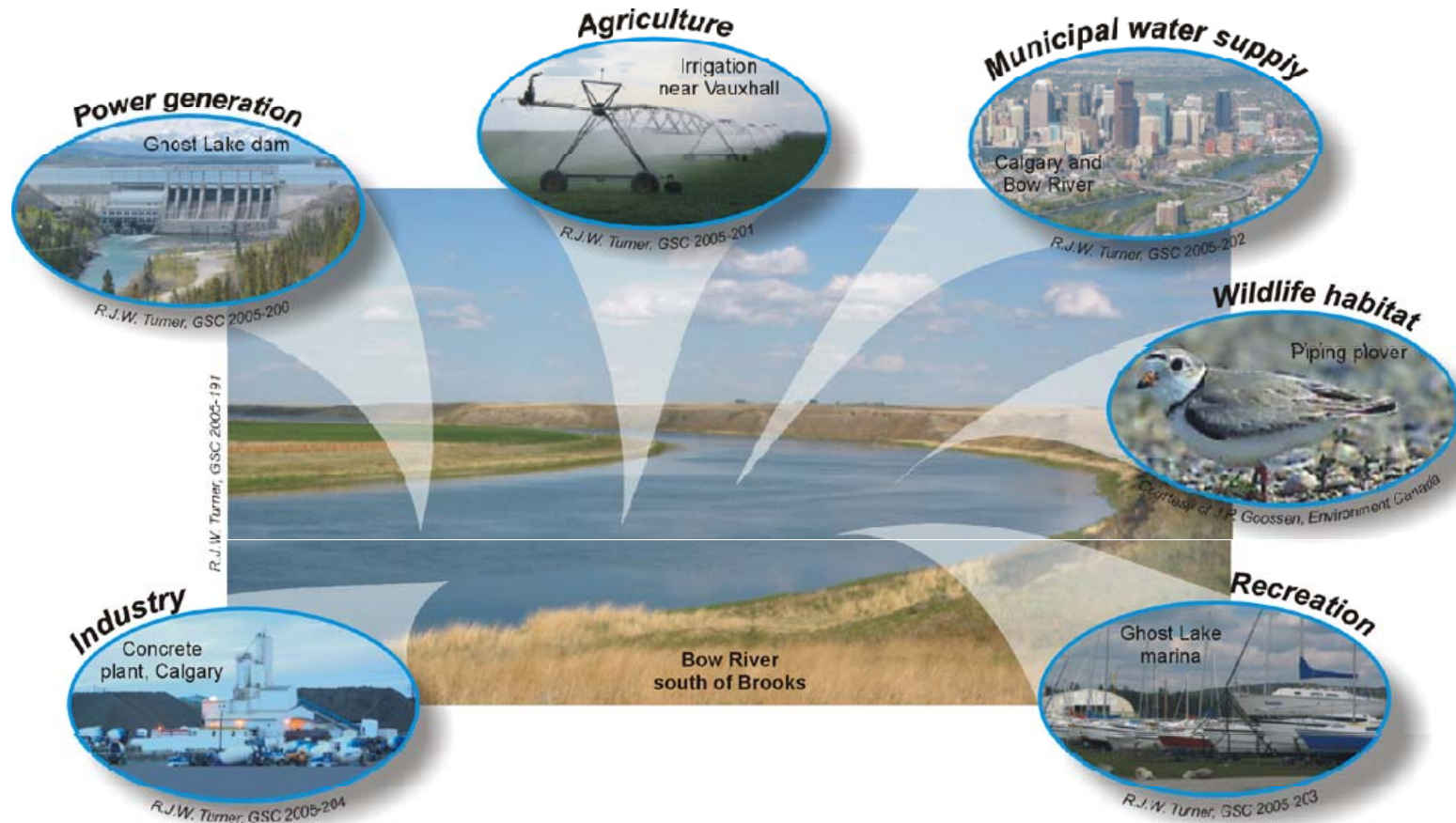
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Public-Private partnership will be critical in the future



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Coastal and inland water quality impacts everyone.



Contamination with human sewage and animal production runoff can result in harmful waterborne bacteria contamination.

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“Waterborne diseases that originate from human fecal pollution remain a significant public health issue.” - Shanks et. al. American and Environmental Microbiology, 2009



“The U.S. Environmental Protection Agency (EPA) has committed to issuing in 2012 new or revised criteria designed to protect the health of those who use surface waters for recreation. For this purpose, the U.S. EPA has been conducting epidemiologic studies to establish relationships between microbial measures of water quality and adverse health outcomes among swimmers. New methods for testing water quality that would provide **same-day results** will likely be elements of the new criteria.” - Dorevich et. al. Environmental Health Perspectives, 2010



A shift toward rapid methods

*The CWA [Clean Water Act], as amended by the Beaches Environmental Assessment and Coastal Health (**BEACH**) Act of 2000, requires the EPA to conduct studies associated with pathogens and human health under Section 104(v), and to publish new or revised criteria for pathogens and pathogen indicators based on studies under Section 304(a)(9).*

*EPA has also developed a quantitative polymerase chain reaction (**qPCR**) method to detect and quantify enterococci more rapidly than the culture method.*

--Federal Register; Vol 76, No. 245

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EPA Methods: A and B



qPCR is a rapid and accurate alternative to traditional culture based methods for detecting waterborne pathogens.

- Reduce time to result from over 24 hours to less than a few hours
- Increase accuracy and reduce false negatives by using species-specific TaqMan® Assays.
- Minimize lengthy and subjective data analysis
- Speed
- Accuracy
- Ease of use

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Applied Biosystems offers a complete suite of qPCR products to deliver results you can trust.

- [PrepSEQ™ Nucleic Acid Extraction Kits](#)
- [MagMAX™ Express Particle Processor](#)
- [TaqMan® Assays](#)
- [Environmental Master Mix*](#)
- [StepOnePlus™ Real-Time PCR System*](#)
- [7500 Fast Real-Time PCR System](#)

* Evaluated by the EPA



Nucleic Acid Extraction

PrepSEQ Nucleic Acid Extraction Kits

- Specially designed for environmental monitoring
- Inactivates PCR inhibitors to minimize template preparation steps
- Supports medium to high throughput workloads

MagMAX Express Magnetic Particle Processors

- Available in 24 and 96-sample throughput
- High quality nucleic acid extraction from environmental samples
- Easy-to-use magnetic bead based purification
- Deep well configuration available to accommodate larger sample sizes

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TaqMan® Assays

Off the Shelf Assays

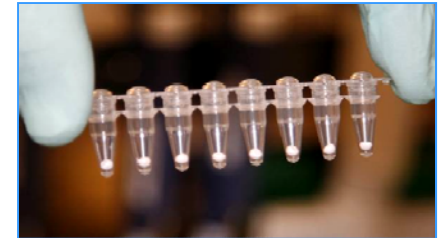
- Pre-designed and validated Salmonella and E. coli assays
- Optimized for use with PrepSEQ nucleic acid extraction
- Robust amplification even in the presence of inhibitors

Custom Assays

- **Lyophilized** and non-lyophilized custom assays available
- Single tube or pre-plated options
- Assay design powered by Applied Biosystems leading algorithms

Benefits of Lyophilized Assays

- Reduced hands-on time
- Improved reproducibility and consistency across time, users and laboratories due to fewer pipetting steps
- Reduced risk of contamination-
- Eliminates wasted reagents for dead volumes
- Run on any current Applied Biosystems real-time PCR instrument, in standard or fast mode
- Stable reagents – no damage due to freeze-thaw cycles and stored at 2 – 8° C
- Shelf-life of 18 months after manufacturing date
- Limit of detection equivalent, or better, than wet format



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Real-Time PCR Amplification and Analysis

StepOnePlus™ System

- Standalone instrument can be run in the field without a computer
- Smaller, more portable footprint
- Delivers same high quality, fast results as the 7500 Fast for up to 4-target multiplex assays
- Easy to use software; runs can be stored on the instrument or directly to a USB stick

7500 Fast System

- Up to 5-target multiplex assays
- Standard and Fast mode options to deliver results in 30 minutes
- Compatible with RapidFinder Software for easy pathogen detection
- System of choice for influenza testing and other critical programs to protect public health

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Service and Support

Service Packages

- Variety of service options available including
 - 24-hour turn around
 - On-site service
 - Rapid exchange loaner program
- Service call center to answer quick questions and provide remote support

Training and Support

- FAS training from the experts in qPCR to get your lab up and running on day one
- Industry leading technical support call center

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Life Technologies. Your partner for protecting public health from waterborne pathogens.



www.appliedbiosystems.com/waterbornepathogendetection