

Summary and Conclusions

WTEC Panel

Regional Drivers for Biosensing

US

EUR

JPN

Why	Biodefense Drug Discovery Health	Food safety Environmental Health	Health Biocomputing
How	Thousand points of light Discovery-driven	Collaborative teams	Federally directed
Opportunity	Materials Interfaces MEMS Algorithms	Integrated systems Strategic research	Applications driven

WTEC Biosensing Workshop: May 13, 2003

Sponsored by NIH (NIBIB), NSF, NASA, ARO, and USDA of the U.S. Government

FINDINGS: R&D Support & Focus (general)

	US	Europe	Japan
<i>research focus</i>	Fundamental science: academia, national labs Applied science & engineering: small cos., national labs, large cos.	Applied science & engineering: academia, national labs, small & large cos.	Fundamental science, engineering
<i>teaming</i>	Individual investigators, interdisciplinary interactions	Multidisciplinary/ multinational teams	Interdisciplinary teams , individual investigators
<i>support: new tech. areas</i>	Federal support to open new technology areas: MEMS, microfluidics, nanotechnology	Generally follow US lead into new technology areas	Generally follow US lead; but industry has longer time horizon than US
<i>technology commercialization</i>	Federal government, individual entrepreneur, venture* support for technology commercialization	Local govt. support, national govt. support, academic admin. support for technology commercialization	National govt. support and increasing university emphasis on technology commercialization

****in good economic times***

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Summary Conclusions (1)

- ◆ Europe leads in development and deployment of inexpensive distributed sensing systems
- ◆ Europe leading in integration of components and materials in microfabricated systems
- ◆ This panel saw much R&D on DNA array technology in Europe and Japan; impact is likely to be only incremental
- ◆ U.S. leads in surface engineering applied to biosensing
- ◆ Communication infrastructure in Europe and Japan better suited for networked biosensing applications
- ◆ Integrated biosensing research groups more common in Europe and Japan (e.g., including capabilities such as molecular recognition, sensor fabrication, device assembly, data processing)

Summary Conclusions (2)

- ◆ Current emphasis on nano/materials research is leading to new transduction strategies
- ◆ Whole cell functional assays are an emerging area for biosensing
- ◆ Integration of analog-digital systems is an important opportunity; U.S. leads