Current Status of PCR Testing

AEIC

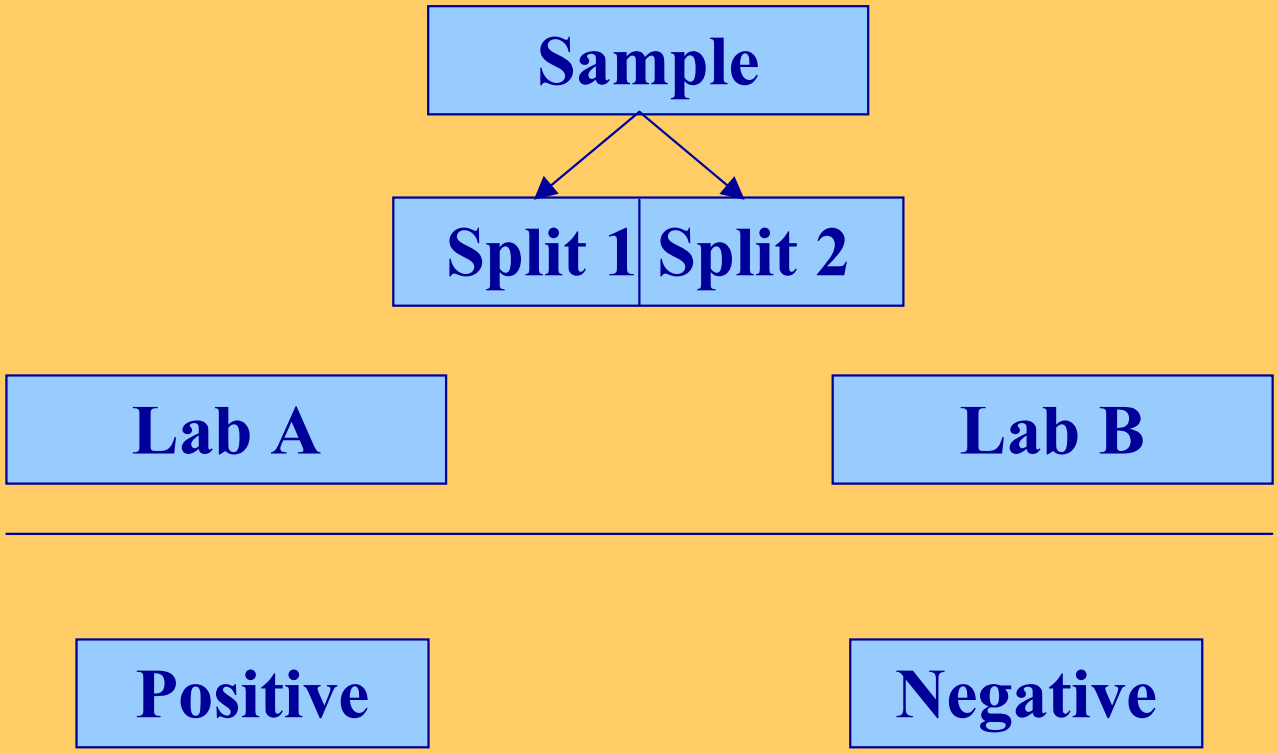
May 4-5, 2000

Current Status of PCR Testing

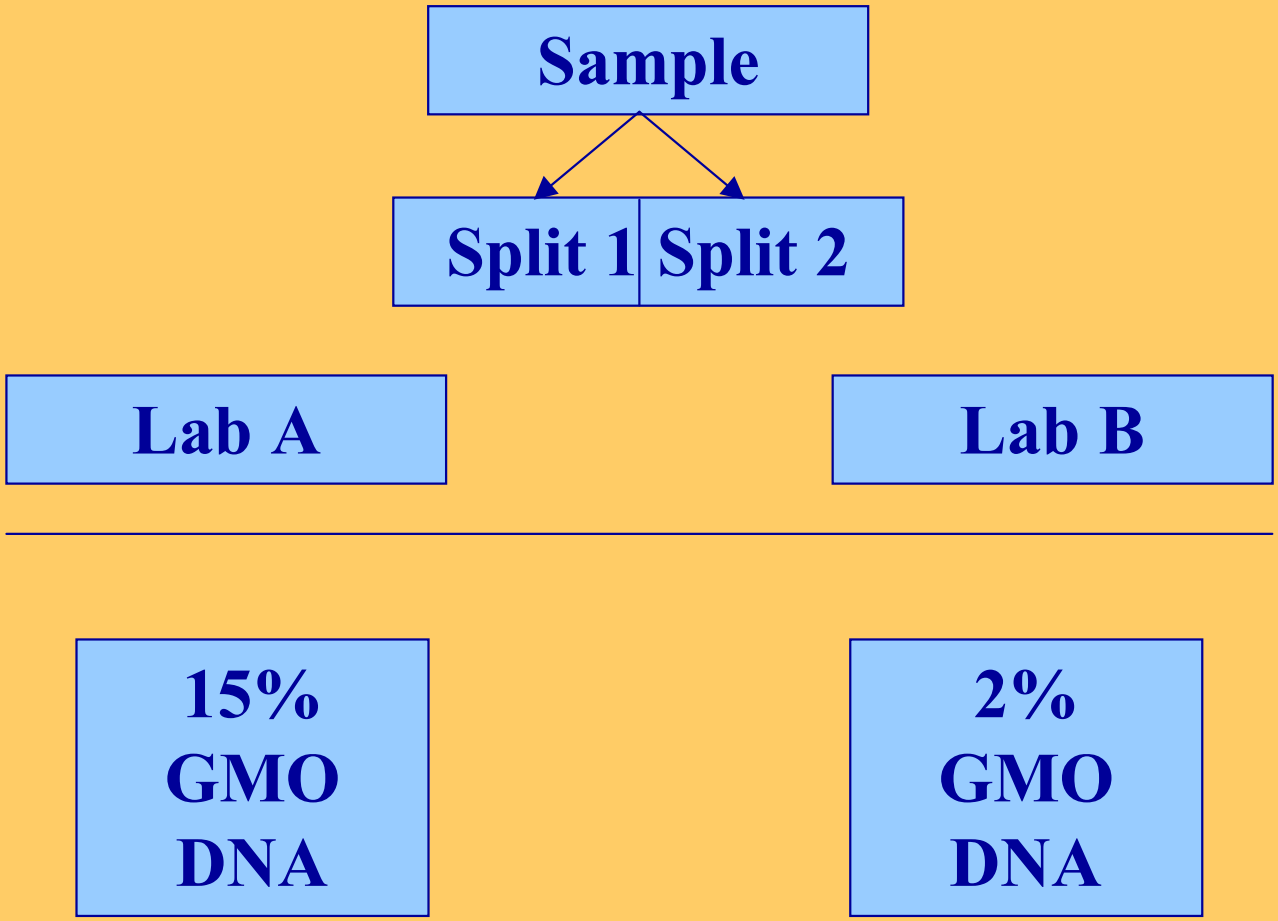
CAVEAT EMPTOR!!

AEIC May, 2000

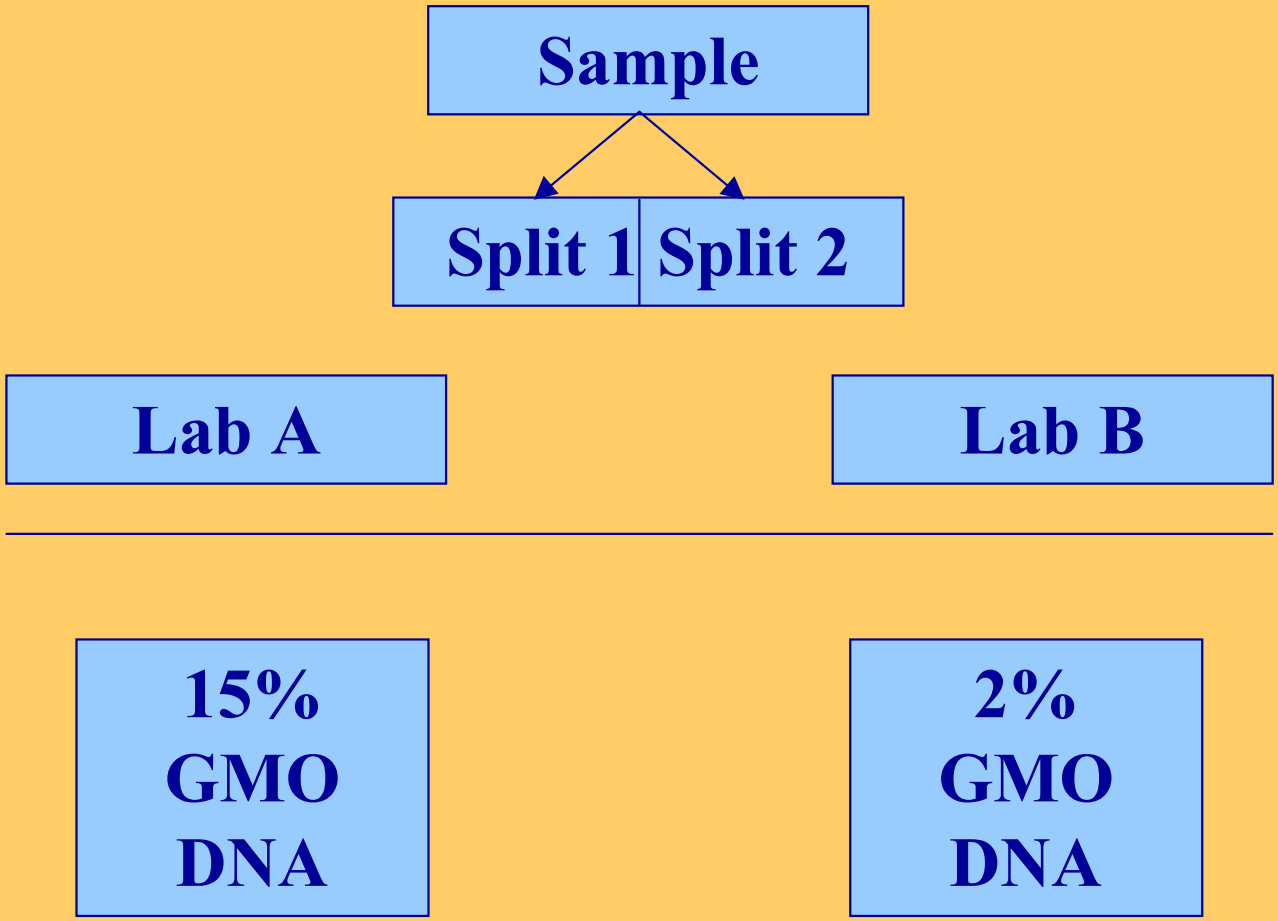
Lack of Standardization



Lack of Standardization



Lack of Standardization



Lack of Standardization

What are meaningful results?

Highly Processed Samples:

…positive, but insufficient corn DNA to quantify

50% GMO DNA
(This could be 1 of 2 DNA molecules extracted)

Unexplained Variations

Inter-Lab & Intra-Lab

SOME POTENTIAL SOURCES:

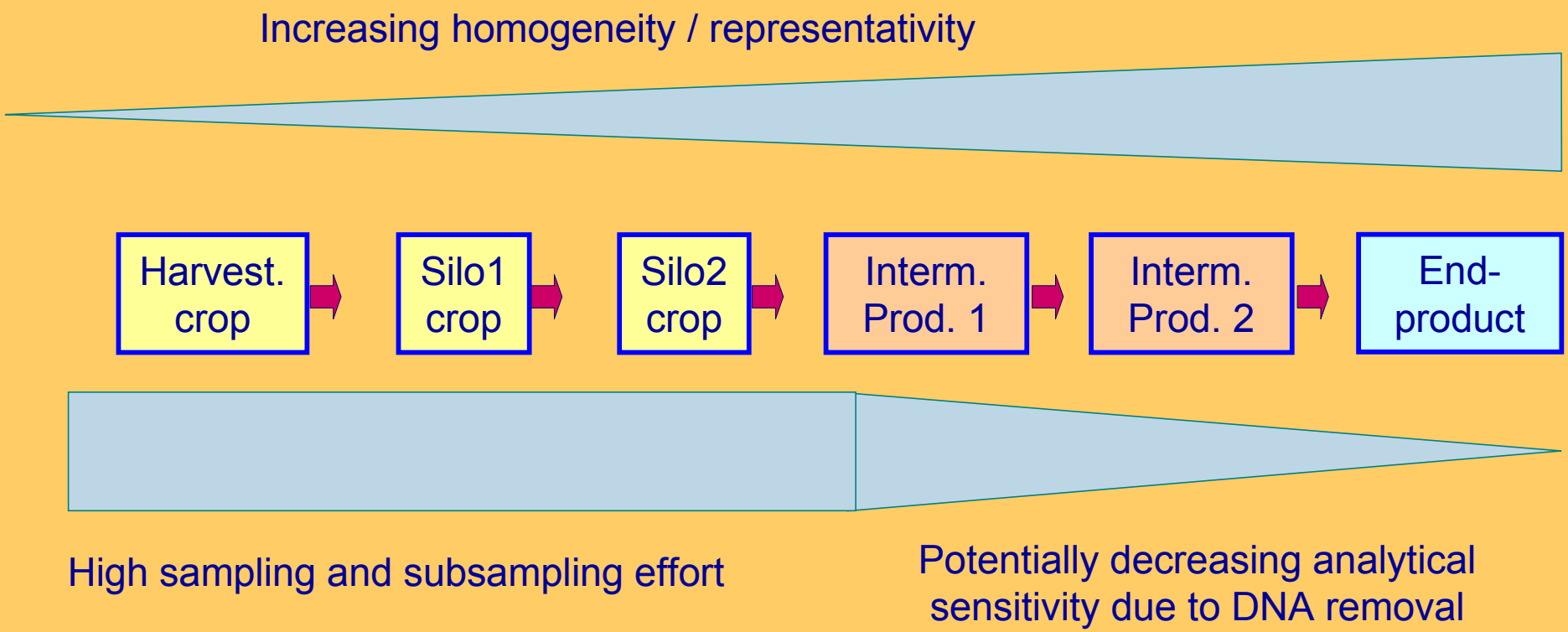
- Sampling
- Sample prep
- Extraction
- PCR Routine
- Reference Materials

Unexplained Variations

Sampling:

- Different methods of sampling
- Size of sample taken
- Number of samples taken
- Mixing
- Contamination from Official Samples

Sampling: Representativity and Sensitivity



Unexplained Variations

Sample Preparation:

- Different methods of splitting
- Different methods of grinding
- Variation in particle size
- Cross Contamination

Unexplained Variations

Extraction:

- Which procedure used
- Efficiency of extraction
- Alternative procedure available

Unexplained Variations

PCR Procedure:

- Machine specific variability
- Number of cycles
- Presence of inhibiting chemicals
- Specificity and validity of primer sets

Unexplained Variations

Reference Materials

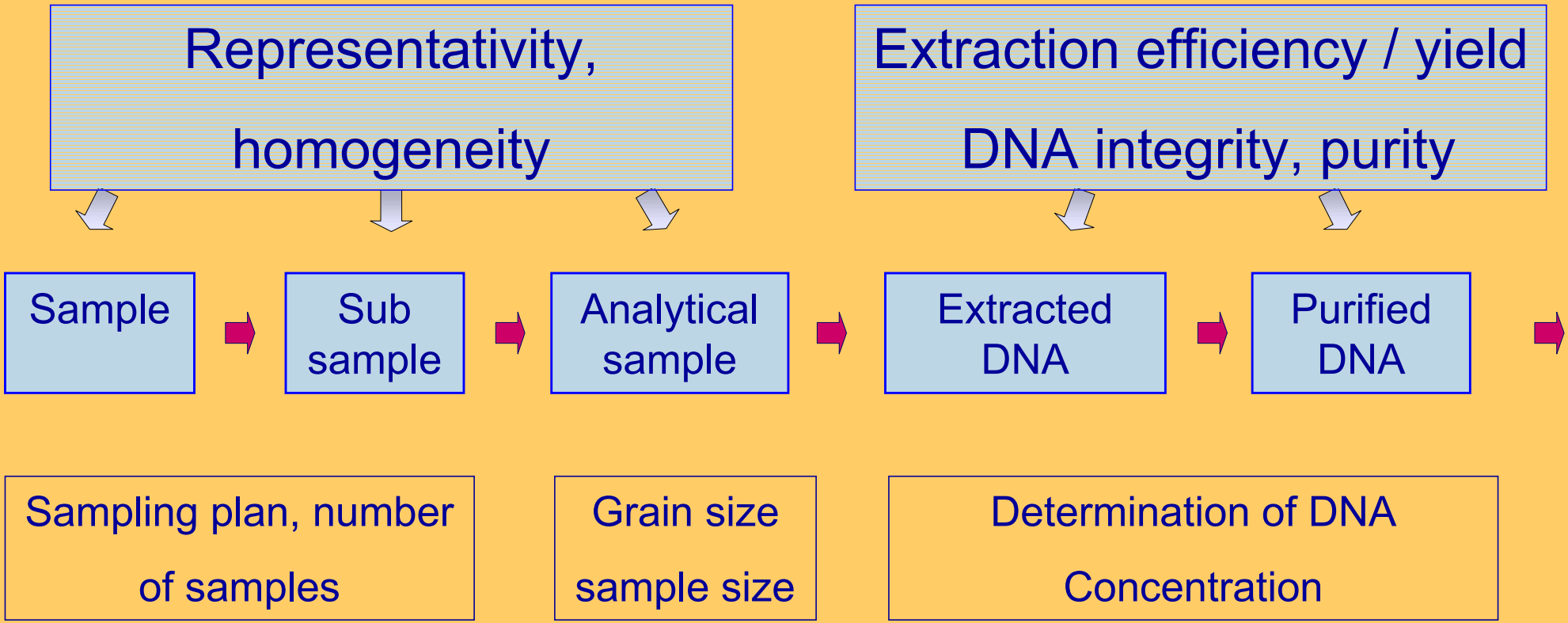
- Copy numbers of inserted cassettes
- Polyploid status of chromosomes
- Similar behavior of reference & transgene
- Qualitative or quantitative
- General or specific events
- Is the reference material what it purports to be?

Unexplained Variations

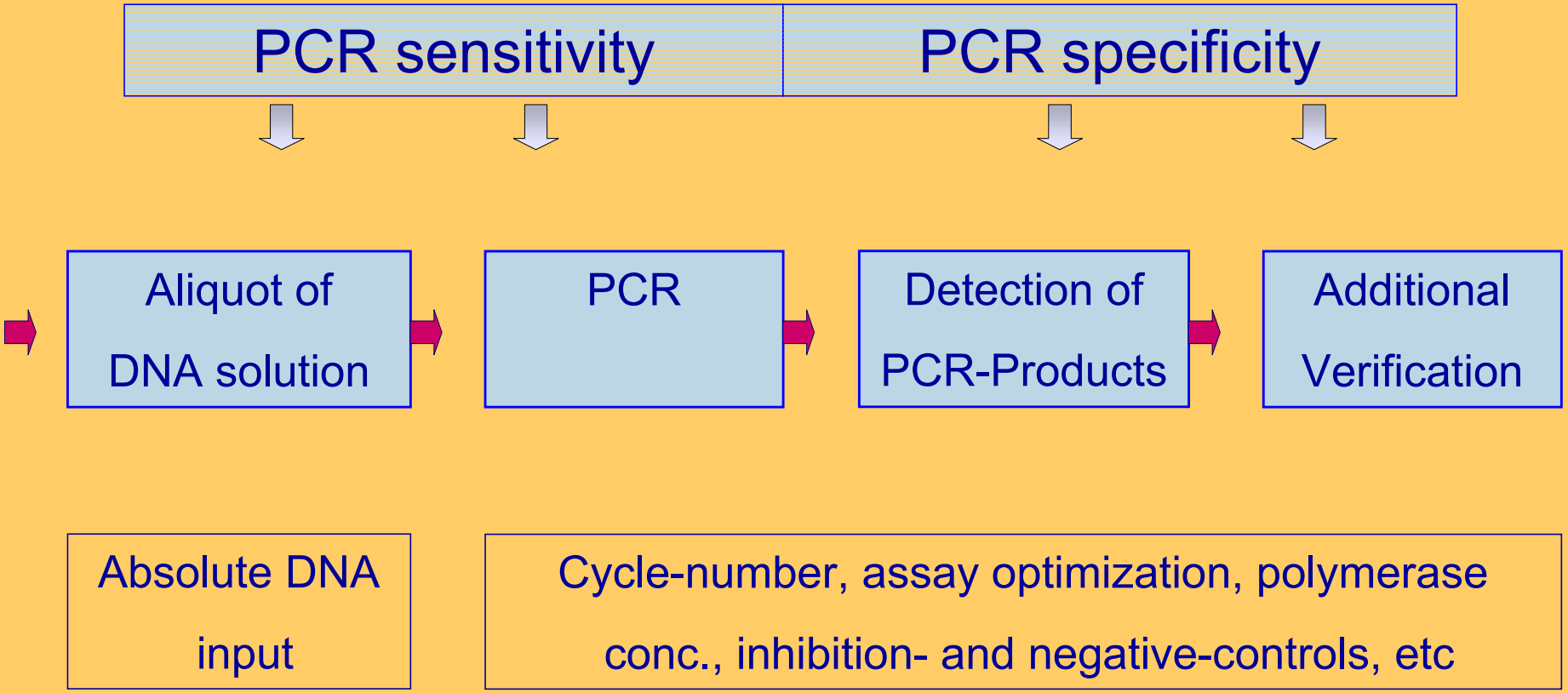
Impact:

- Hinders commercial transactions
- Negative reflection on biotech as a useful application to the food chain
- Legal disputes and rejection of shipments

Steps of Sample Preparation
- Important Factors -

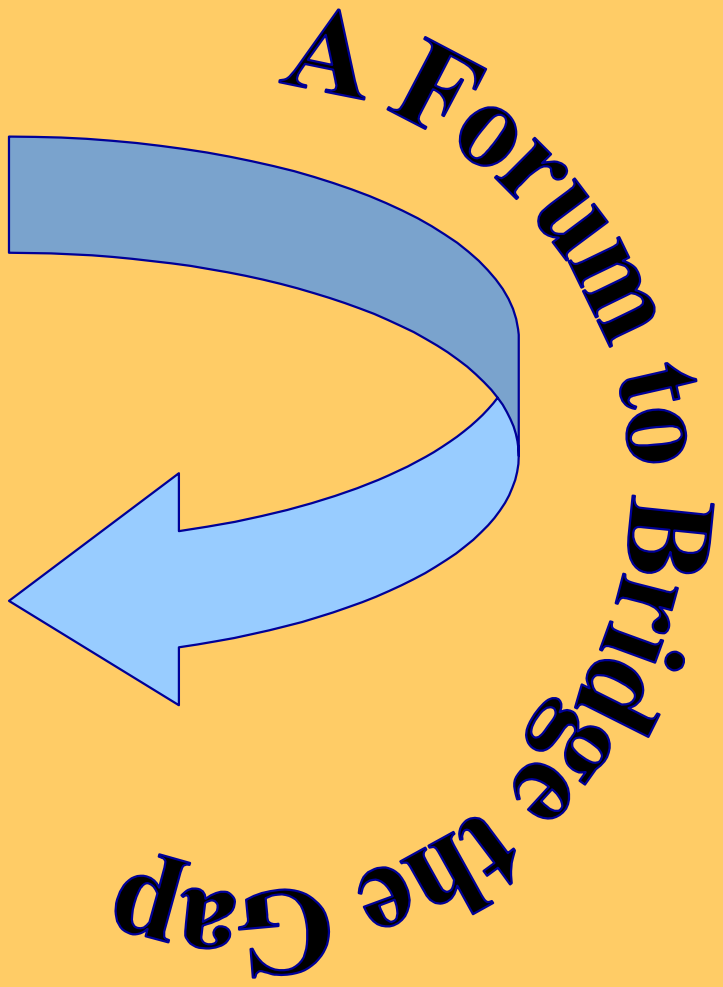


PCR Analysis of DNA
- Important Factors -



What Can AEIC Do?

Esoteric Discussions of Biotech in Foods



Commercial Applications and General Understanding of Biotech in Foods

What Can AEIC Do?

A Forum for Scientific Expertise

Informal Transfer of Information

&

Formal Transfer of Information

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Informal Transfer of Information

Membership Overlap

AEIC + AACC, IFT, ACS, AOAC, etc.

Conduit to translate technical information to "users" and to bring the needs of users back to "developers"

Formal Transfer of Information

Provide a science based source of information to meet the technical needs of groups working to standardize testing of genetically engineered foods.

Formal Transfer of Information

Develop position papers: e.g.,

Effective sampling procedures

Minimum QA protocols

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Formal Transfer of Information

Technical Information:Test Guidelines

- Effective sampling procedures
- Minimum QA Protocols (for lab and field tests)
- Guide for selection of a test kit or a contract laboratory
- Limitations of the testing technologies available

Formal Transfer of Information

Public Voice for Technical Information

A non-biased source of public oriented information on biotechnical concerns

- Educators
- Regulators
- News media
- Legislators

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