

# Protecting sample integrity

## Absolutely contamination-free pipette tips

Clean pipette tips are critical in life science research. To ensure high quality lab results, tips coming into contact with samples must be free of DNase, RNase, DNA, pyrogen and adenosine triphosphate (ATP). Understanding these typical sample contaminants and taking precautionary measures to reduce or eliminate them at their source is vital to protecting sample integrity.

### Contamination originates both in and out of the lab

Human contact is the primary source of contamination of pipette tips. Poor handling procedures, such as not using protective gloves or inadvertently exposing tips to other contamination sources in the laboratory, can compromise tip cleanliness. The manufacturing process and the environment in which tips are produced and packaged is another potential contamination source that should not be overlooked.

### How can contaminants be reduced or eliminated?

Laboratory personnel typically employ a set of procedures to assure that sources of contamination in the lab are minimized. But because sample contaminants can originate outside the lab, such as during the manufacturing and packaging process of pipette tips, it is important to evaluate what controls have been put into place at the production level, to assure that possible risk factors have been reduced or eliminated before the product arrives in the lab.

### Typical contaminants and their sources

Contaminants that affect lab results include:

Contaminant	Classification	Source	Risk
<b>DNase</b>	Enzyme	Human contact, saliva	Degrades DNA purification protocols and PCR assays
<b>RNase</b>	Enzyme	Human contact, oils from hands, face, arms, and hair	Could destroy RNA, the read copy of DNA
<b>DNA</b>	Nucleic acid	All living organisms	Causes false-positive results in DNA applications
<b>Pyrogen</b>	Endotoxin	Bacteria found universally in air, water, soil, and human contact	Could contaminate drug manufacture, cell culture, and medical labs
<b>Adenosine triphosphate</b>	Nucleotide	All living organisms	Presence of ATP indicates biological contamination

Printed in USA. © 2009 Rainin Instrument, LLC. TR-2004-1