BEBPA 2015 HCP Assay Survey

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Interactive Survey:
HCP Assays

Results from:
2015 Host Cell Protein Conference
San Francisco, CA USA

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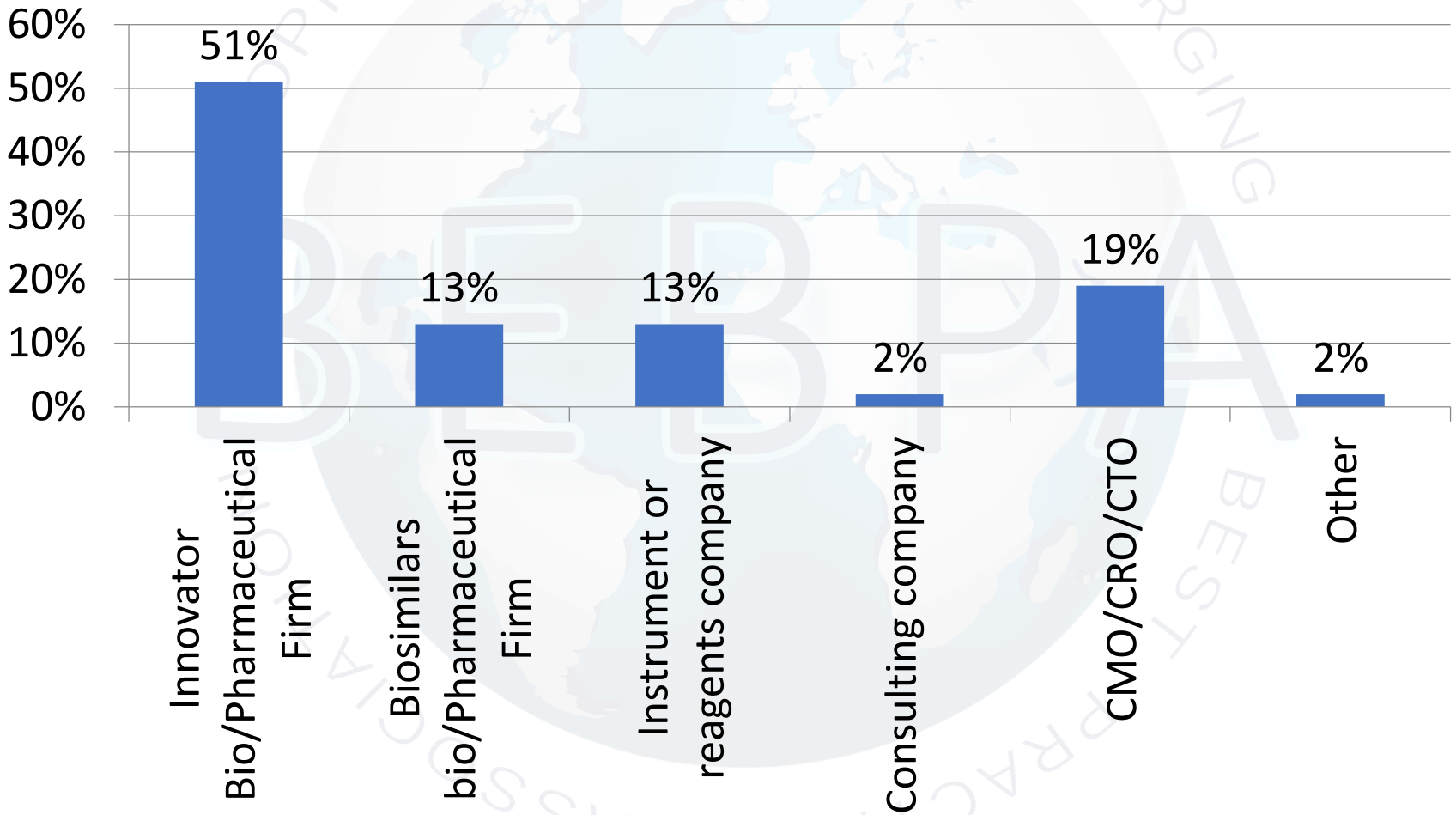
EBPA 2015: HCP Survey

Question: What Type of Firm Do You Work For?

1. Innovator bio/pharmaceutical firm
2. Biosimilars bio/pharmaceutical firm
3. Instrument or reagents company
4. Consulting company
5. CMO/CRO/CTO
6. Other

Type of Firm



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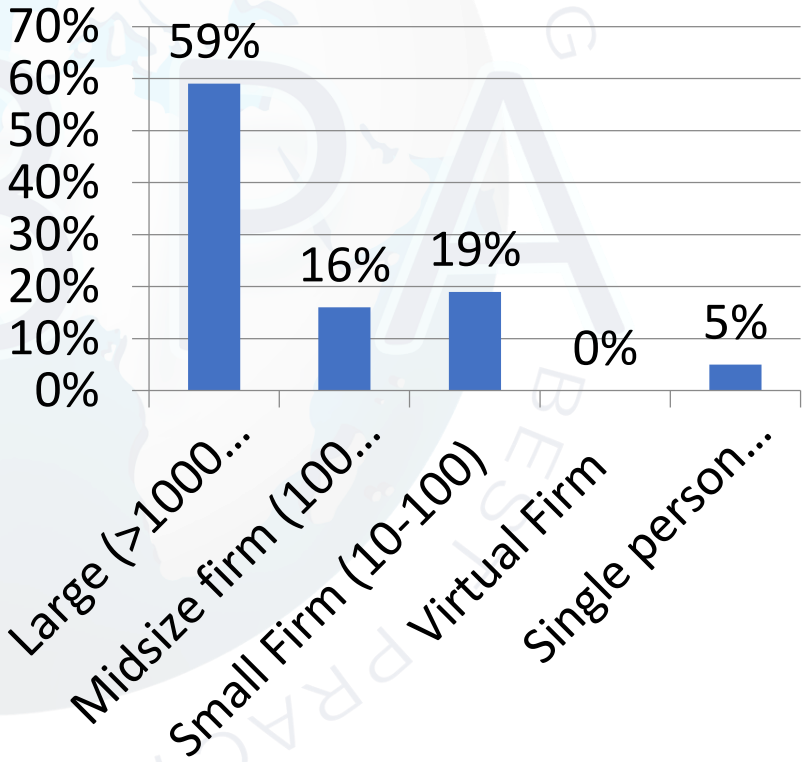
Question: What Size is the Firm You Work For?

1. Large (>1000 employees)
2. Midsize firm (100 to 1000 employees)
3. Small firm (10-100)
4. Virtual firm
5. Single-person company



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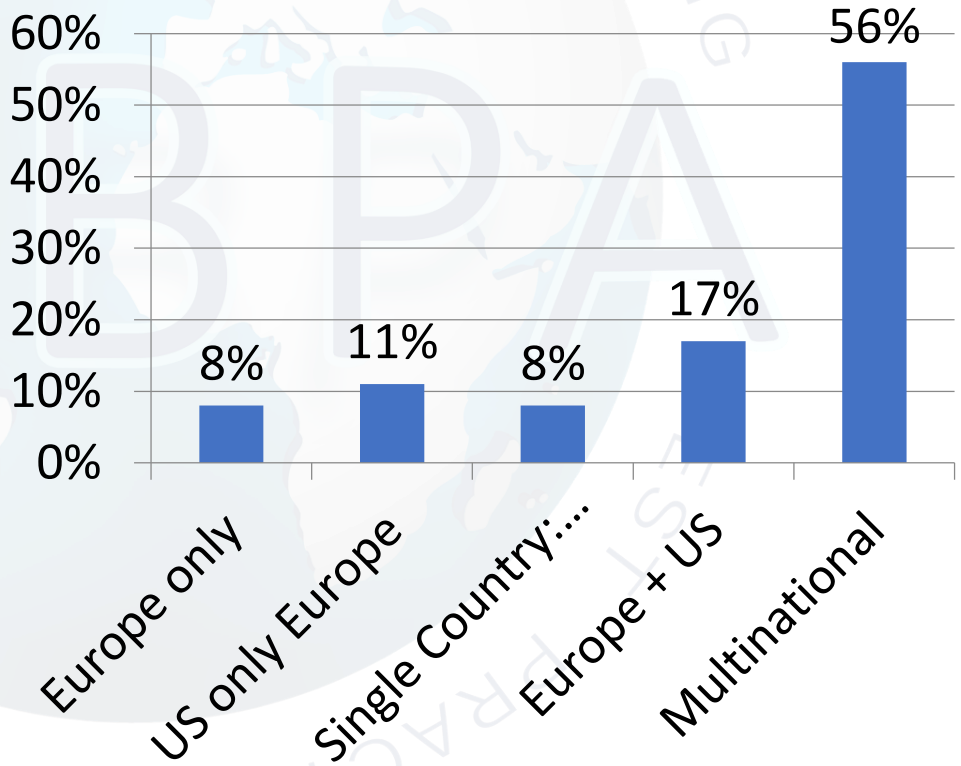
Where is Your HCP Data Going (Which Regulatory Authorities)?

1. Europe only
2. US only
3. Europe + US
4. Single country: Not Europe/US
5. Multinational



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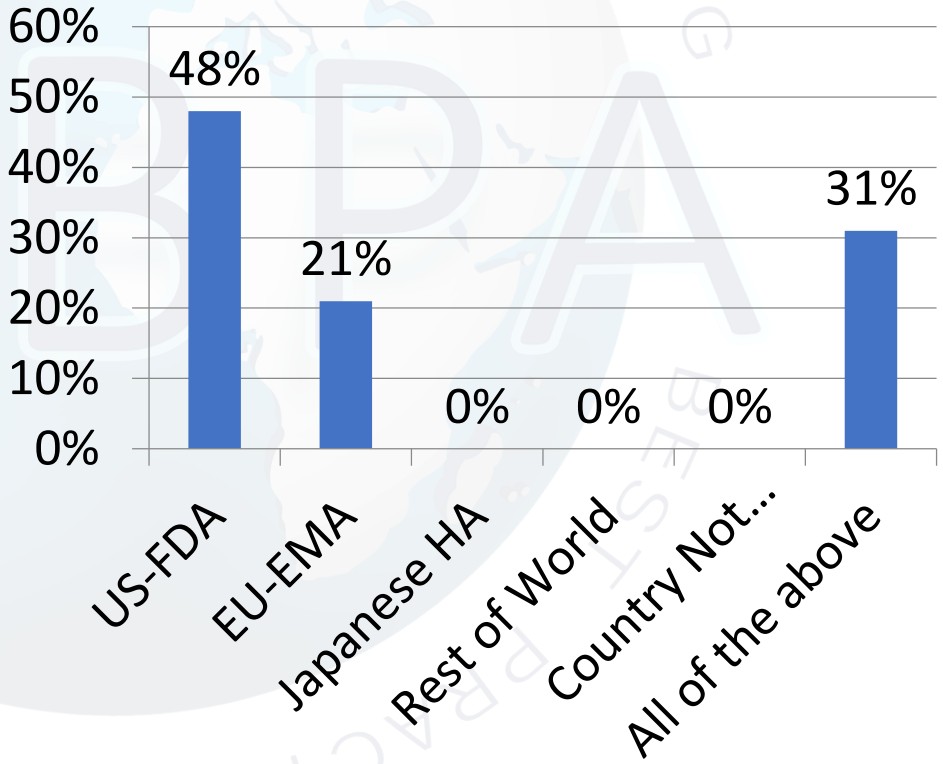
The Health Authorities that seem most interested in our HCP testing program (those that ask the most questions) are:

1. US-FDA
2. EU-EMA
3. Japanese HA
4. Rest of World
5. Country Not Named Above
6. All of the above



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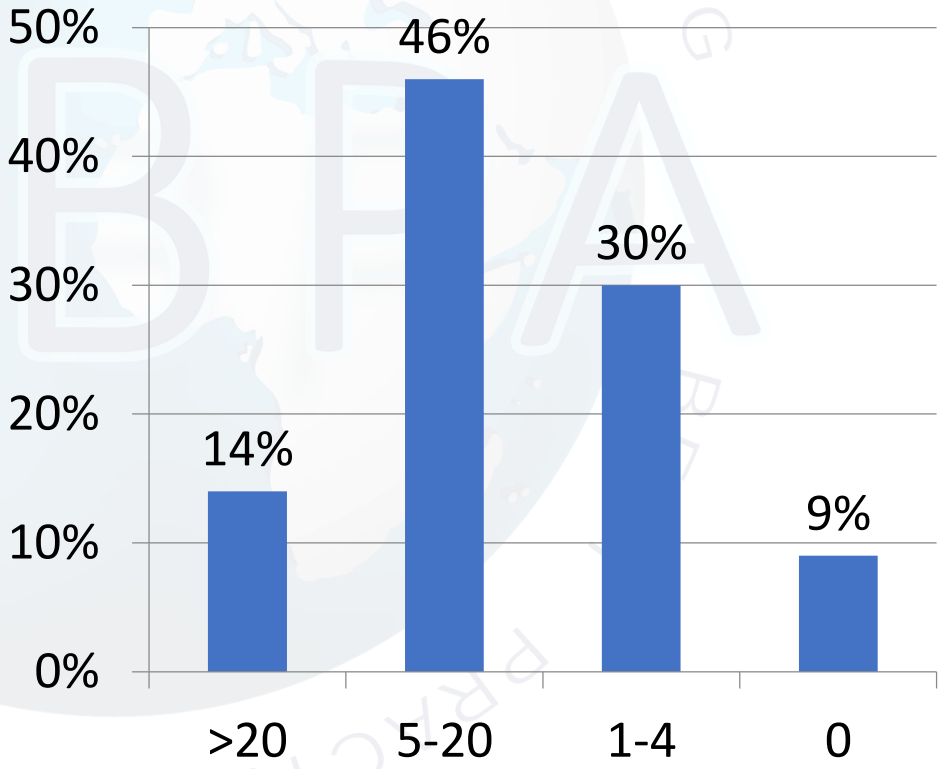
Question: How Many Products Do You Have Which Require an HCP Assay?

1. >20
2. 5-20
3. 1-4
4. 0



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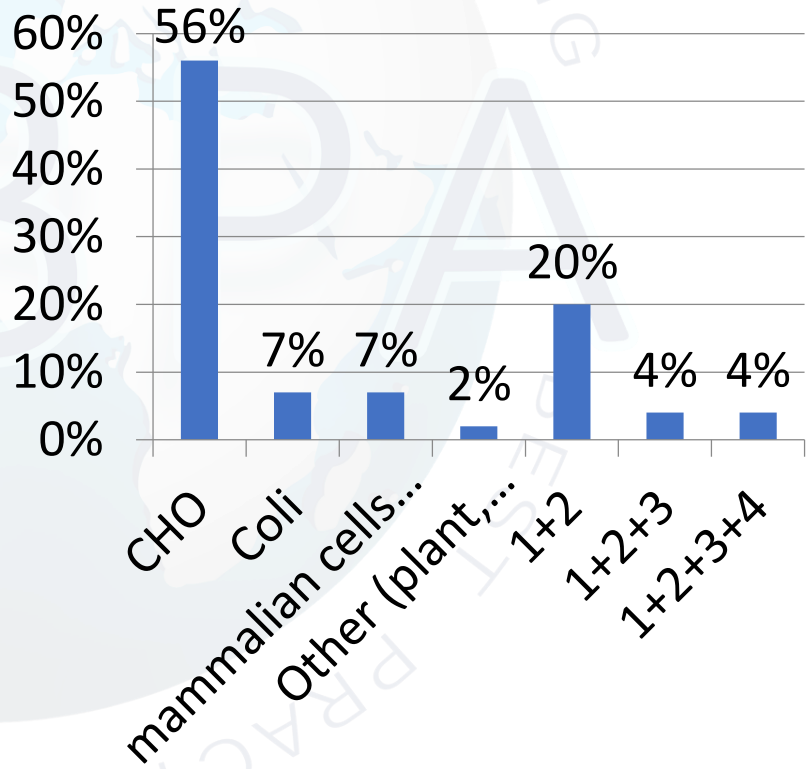
Our expression systems are *Mostly*:

1. CHO
2. E. coli
3. Mammalian cells other than CHO
4. Other (plant, insect, etc)
5. 1+2
6. 1+2+3
7. 1+2+3+4



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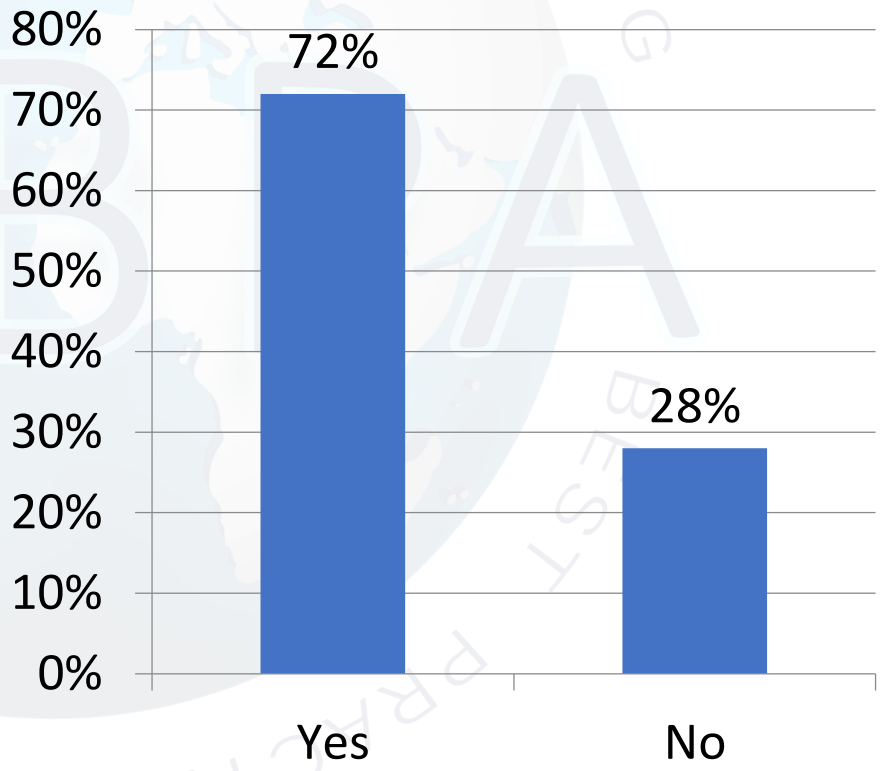
Do You Use Commercial Kits at Any Time During Product Development?

1. Yes
2. No



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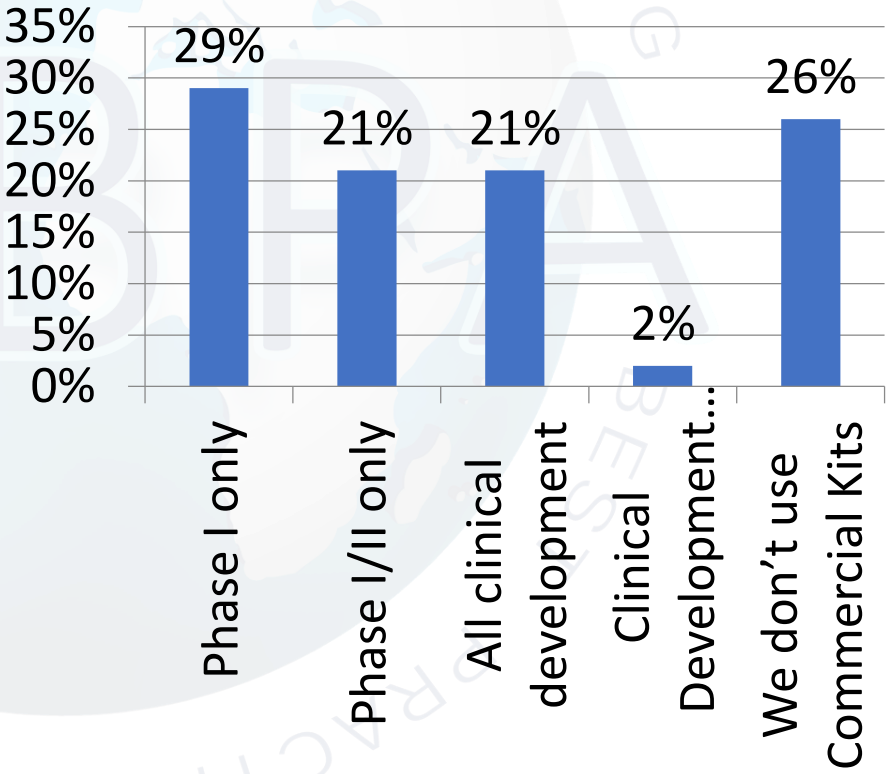
If You Use Commercial Kits, When Do Your Use Them?

1. Phase I only
2. Phase I/II only
3. All clinical development
4. Clinical development and post approval
5. We don't use commercial kits



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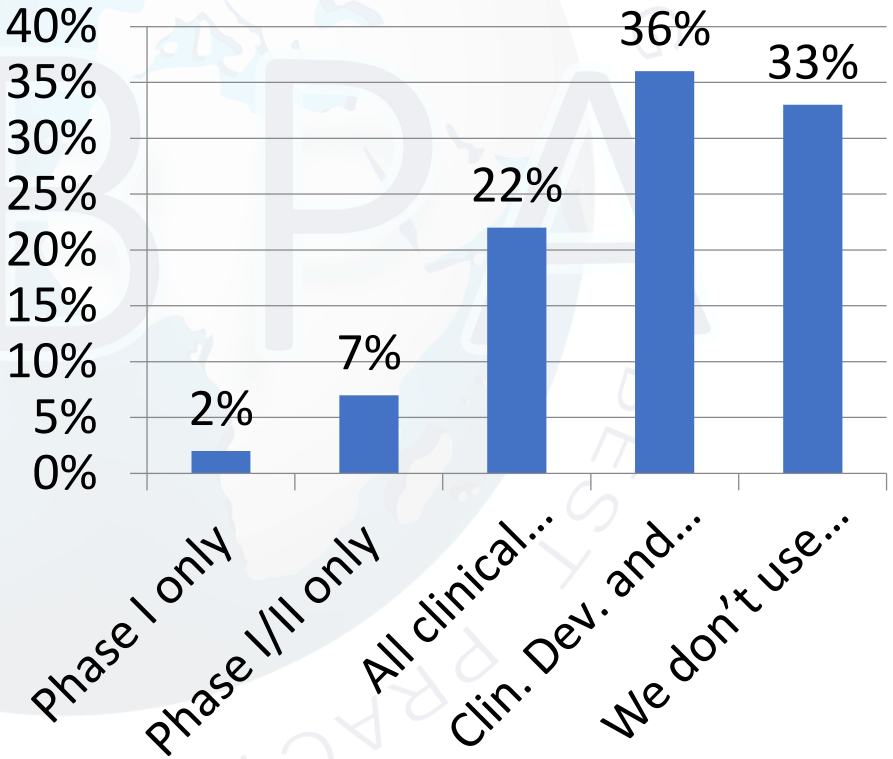
Do You Use an In-House Platform Assay?

1. Phase I only
2. Phase I/II only
3. All clinical development
4. Clin. dev. and post approval
5. We don't use platform assays



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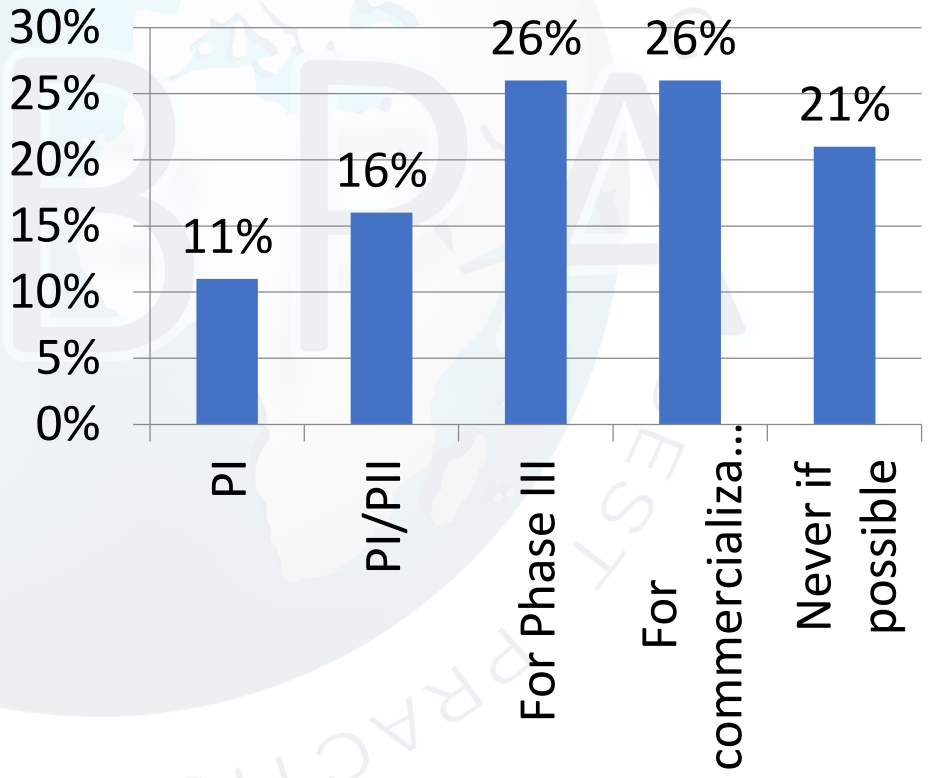
At What Point Do You Implement a Product-Specific HCP Assay?

1. PI
2. PI/PII
3. For Phase III
4. For commercialization
5. Never if possible



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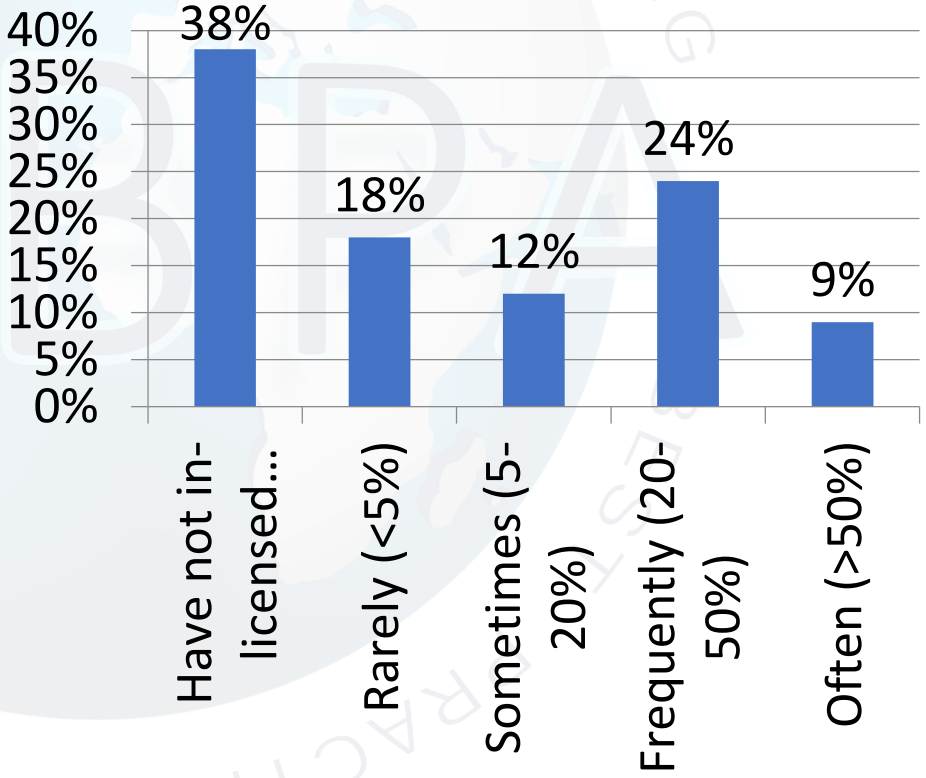
When in-licensing an antibody from another company, how often do your find their HCP characterization is not up to your company's standards?

1. Have not in-licensed products
2. Rarely (<5%)
3. Sometimes (5-20%)
4. Frequently (20-50%)
5. Often (>50%)



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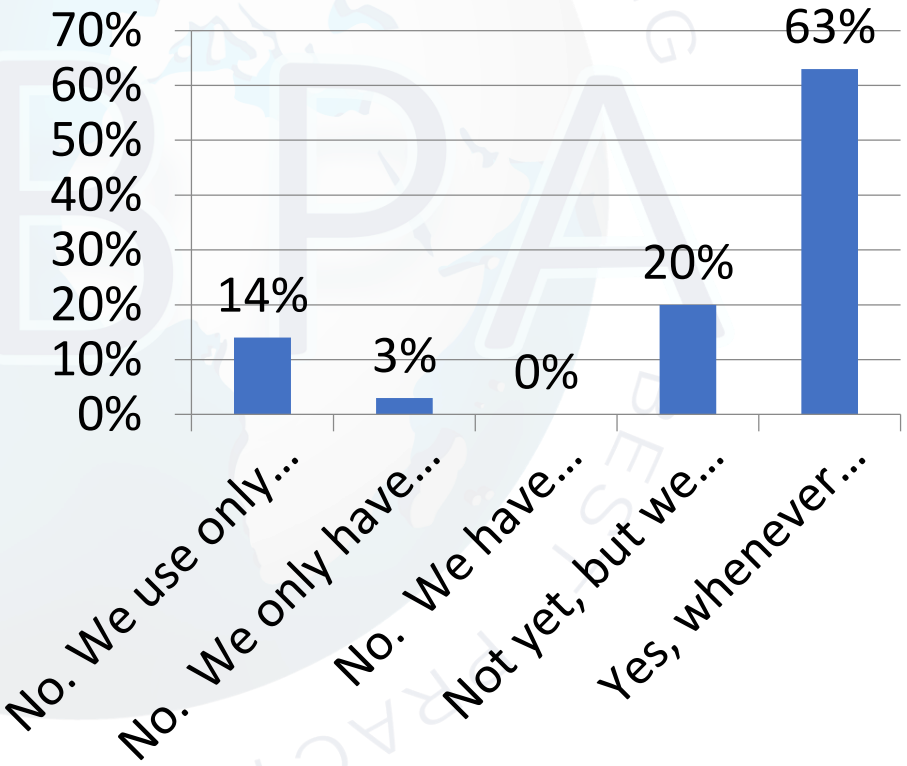
Is Your Company Developing Platform HCP Assays?

1. No. We use only commercial or product specific assays.
2. No. We only have a single product.
3. No. We have multiple products, but they do not utilize a common platform culture processes.
4. Not yet, but we are working on it
5. Yes, whenever possible



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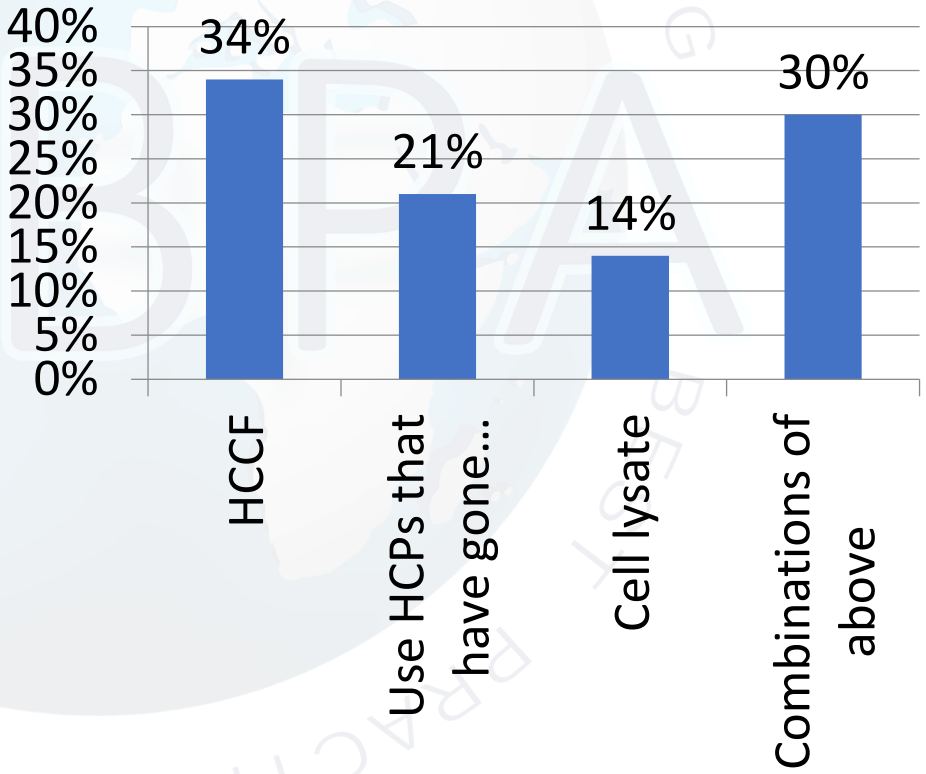
In Developing HCP Assays (Platform or Process Specific), We Typically Use for Immunogen and Standard

1. HCCF
2. Use HCPs that have gone through 1 or more column purification steps
3. Cell lysate
4. Combinations of above



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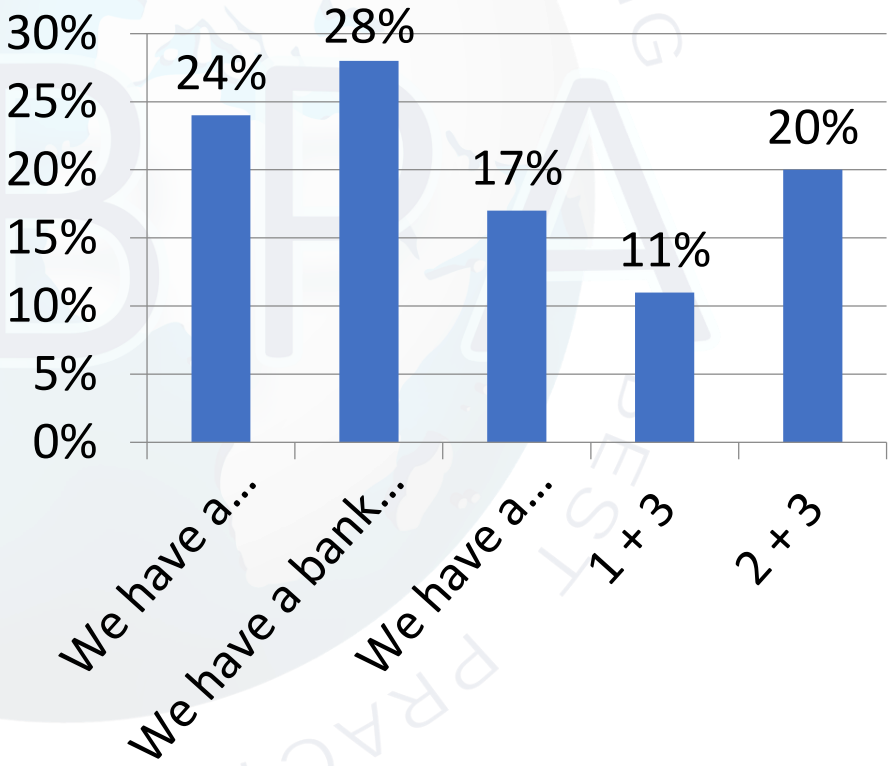
How Do You Manage Your HCP Critical Rare Reagents?

1. We have a purified bank of reagents sufficient for many years
2. We have a bank of unpurified material (e.g. Sera for antibodies, unpurified antigen material, etc.) sufficient for many years.
3. We have a protocol for developing replacement critical reagents, and a basis for showing comparability
4. 1 + 3
5. 2 + 3



Part Two

To be continued……

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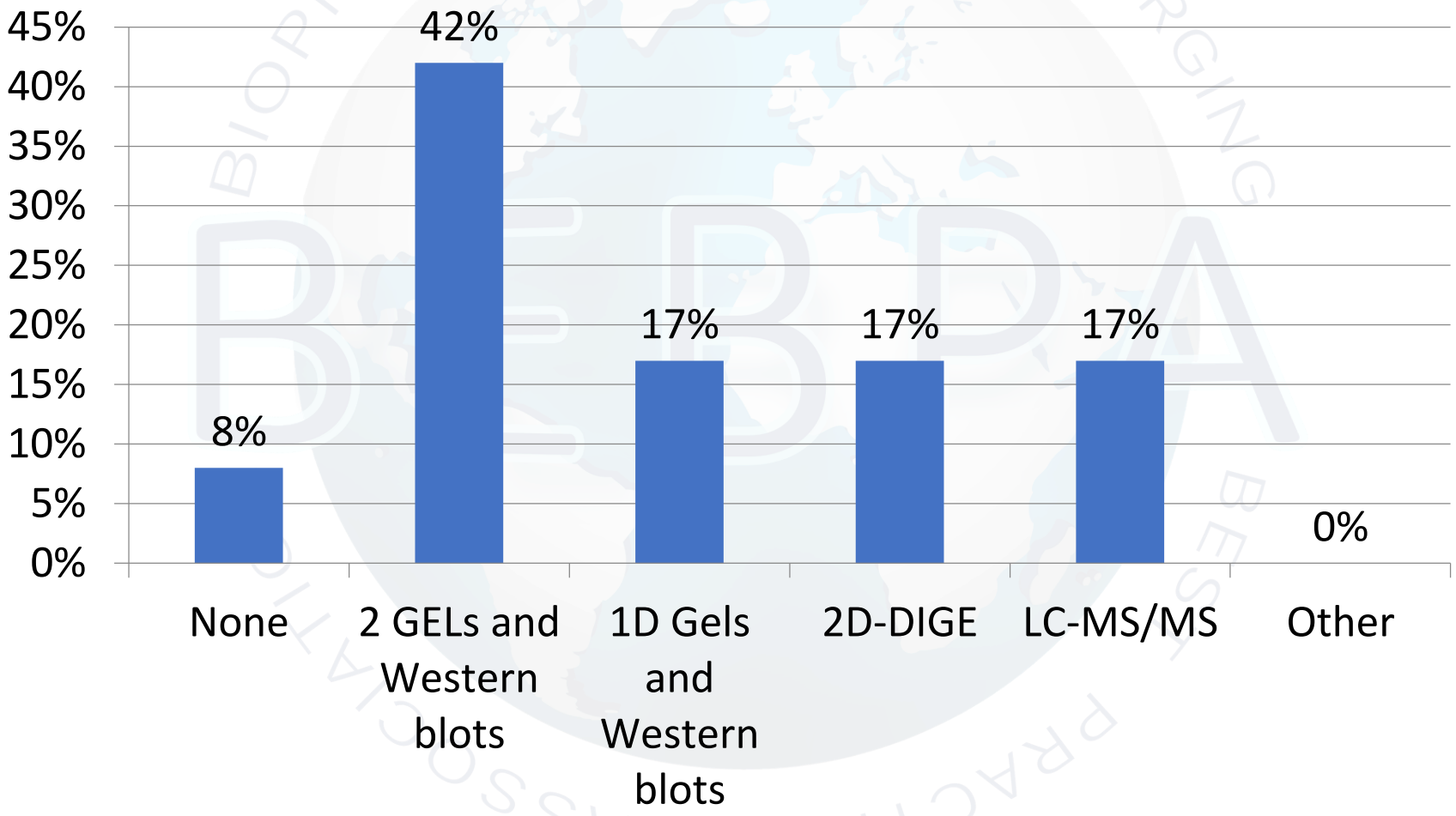
What Orthogonal Technologies Do you routinely use for HCP characterization?

(Check all that apply)

1. None
2. 2 Gels and Western blots
3. 1D Gels and Western blots
4. 2D-DIGE
5. LC-MS/MS
6. Other

Multiple Responses Allowed

Orthogonal Technologies



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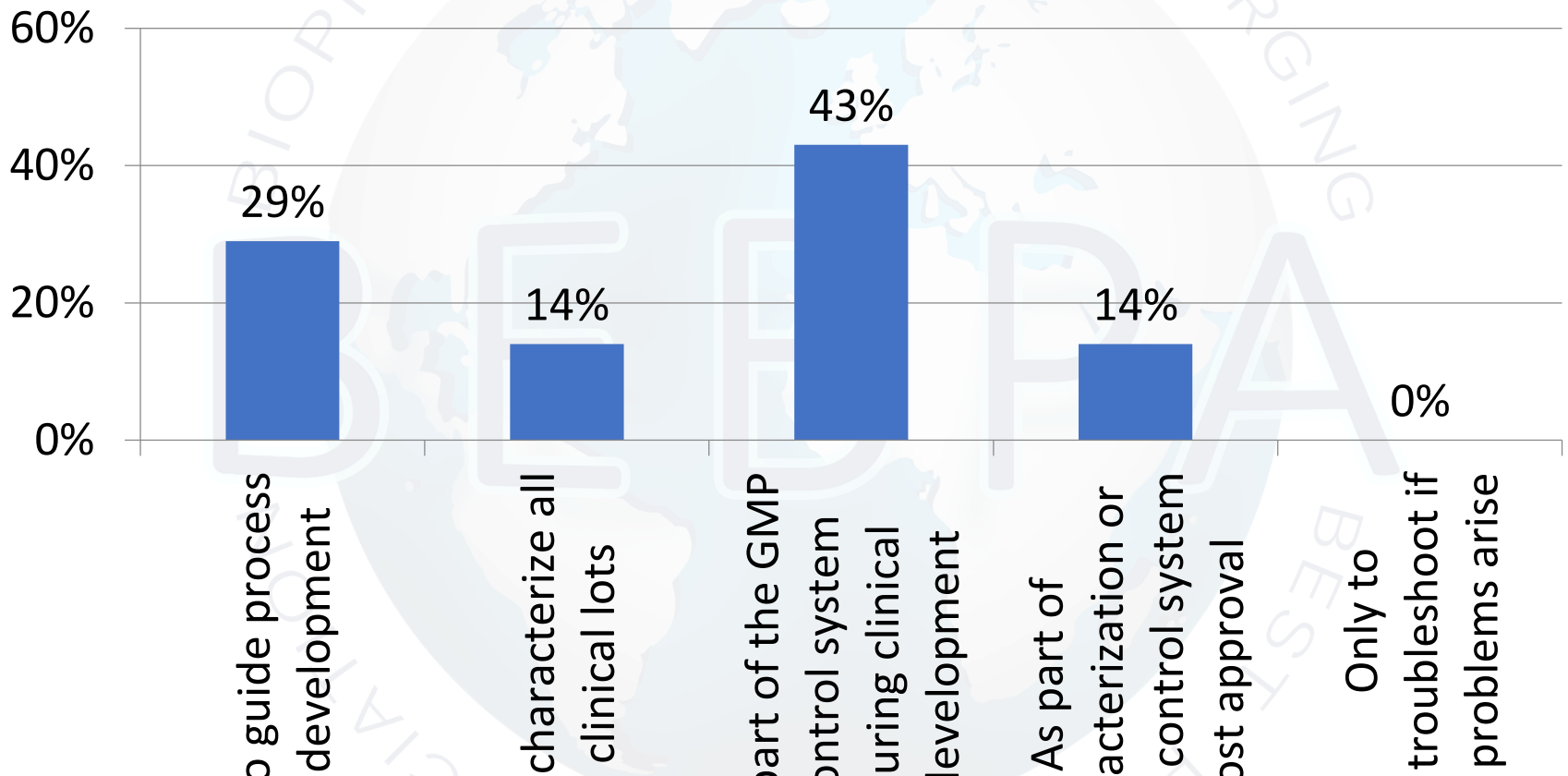
Considering the orthogonal methods listed on the previous slide – these methods are used (check all that apply):

1. To guide process development
2. To characterize all clinical lots
3. As part of the GMP control system during clinical development
4. As part of characterization or GMP control system post approval
5. Only to troubleshoot if problems arise

Multiple Responses Allowed

Use of Orthogonal Methods



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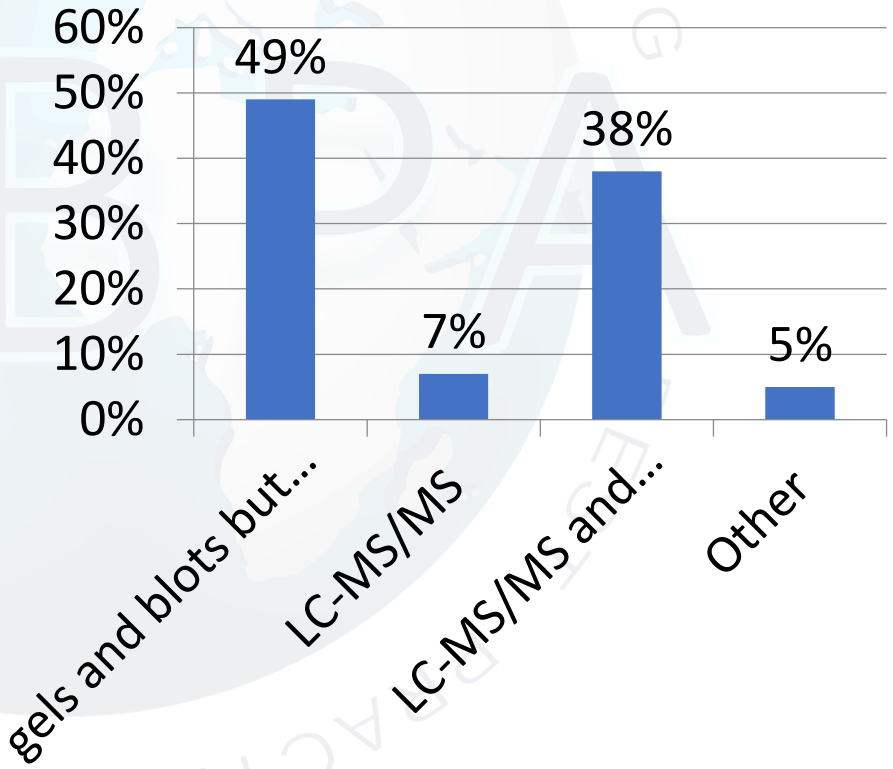
In terms of orthogonal methods, we routinely use

1. Gels and blots, but not LC-MS/MS
2. LC-MS/MS
3. LC-MS/MS and gels and blots
4. Other



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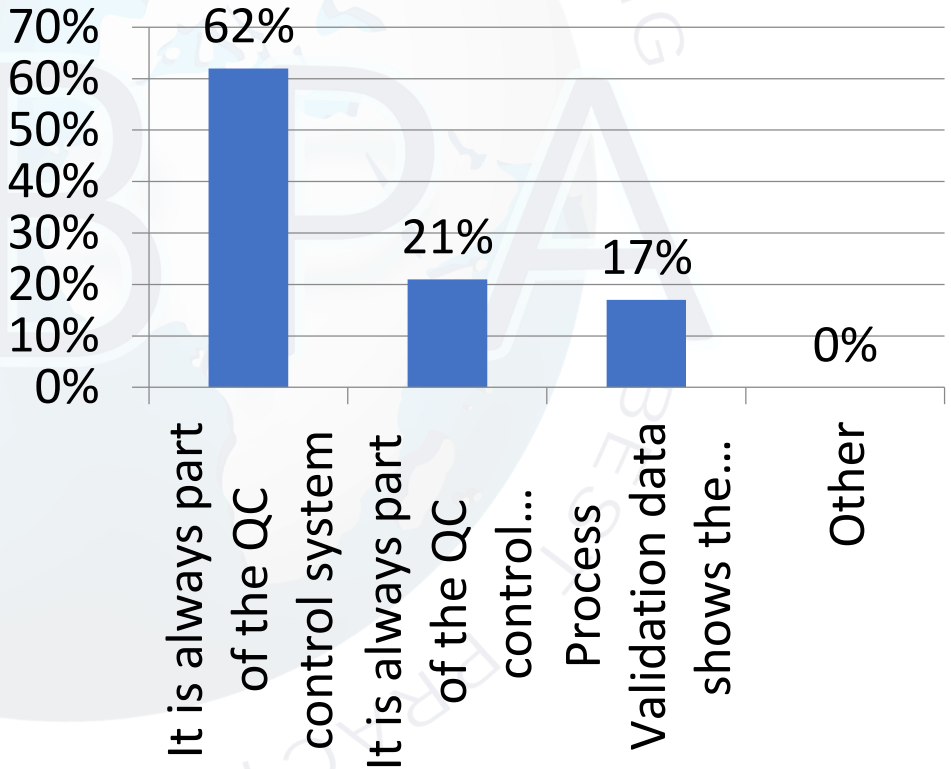
How is the HCP Immunoassay Used to Support Commercial Product?

1. It is always part of the QC control system
2. It is always part of the QC control system. Orthogonal methods (e.g. gels/blots, LC-MS/MS) are also used.
3. Process validation data shows the process is robust and HCP assays are not needed in the QC system
4. Other



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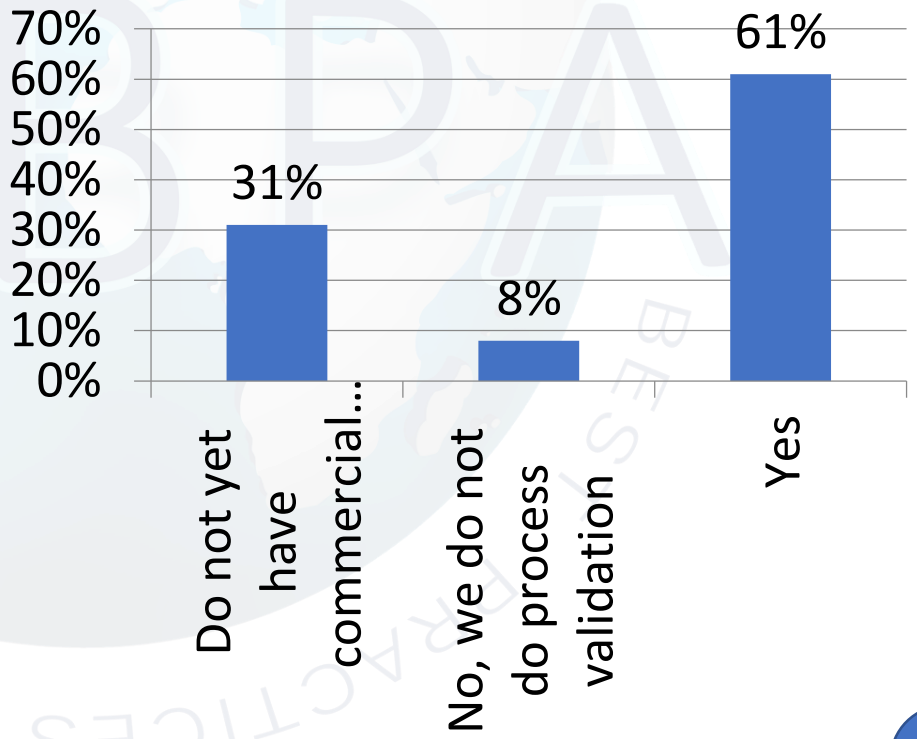
Do you provide extensive process validation data to show robust clearance of HCPs to the Health Authorities?

1. Do not yet have commercial products
2. No, we do not do process validation
3. Yes



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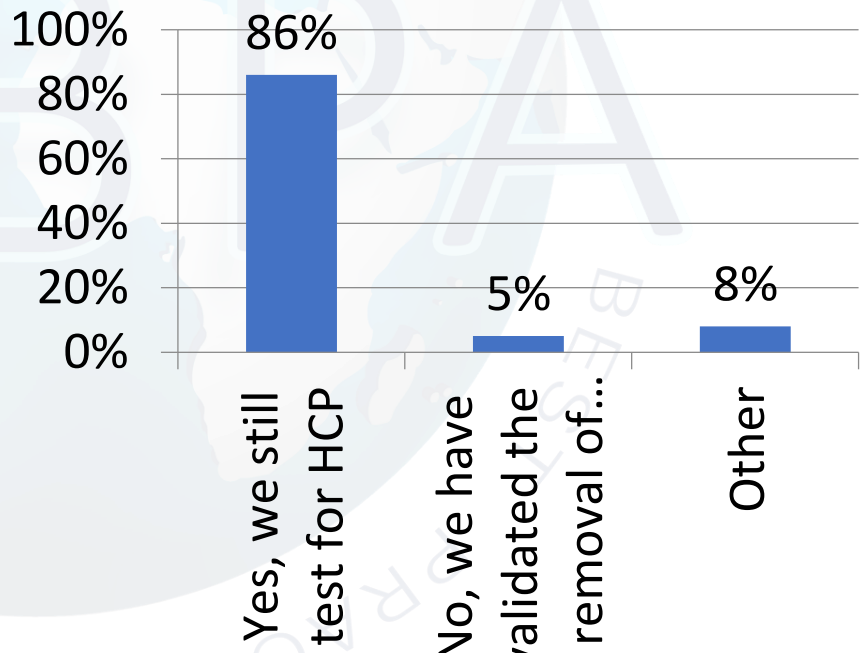
If you answered yes on the previous slide (you do extensive process validation to show clearance of HCP), do you include HCP testing in your QC strategy?

1. Yes, we still test for HCP
2. No, we have validated the removal of HCP
3. Other



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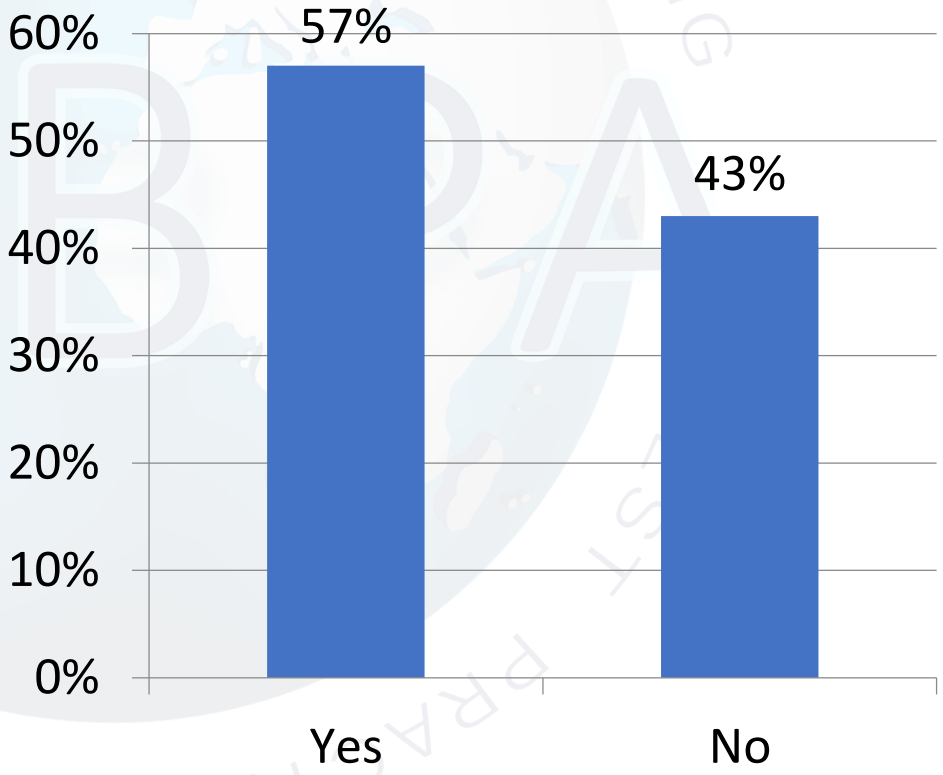
Have you ever developed specific assays (immuno or LC-MS) for individual problematic HCPs?

1. Yes
2. No



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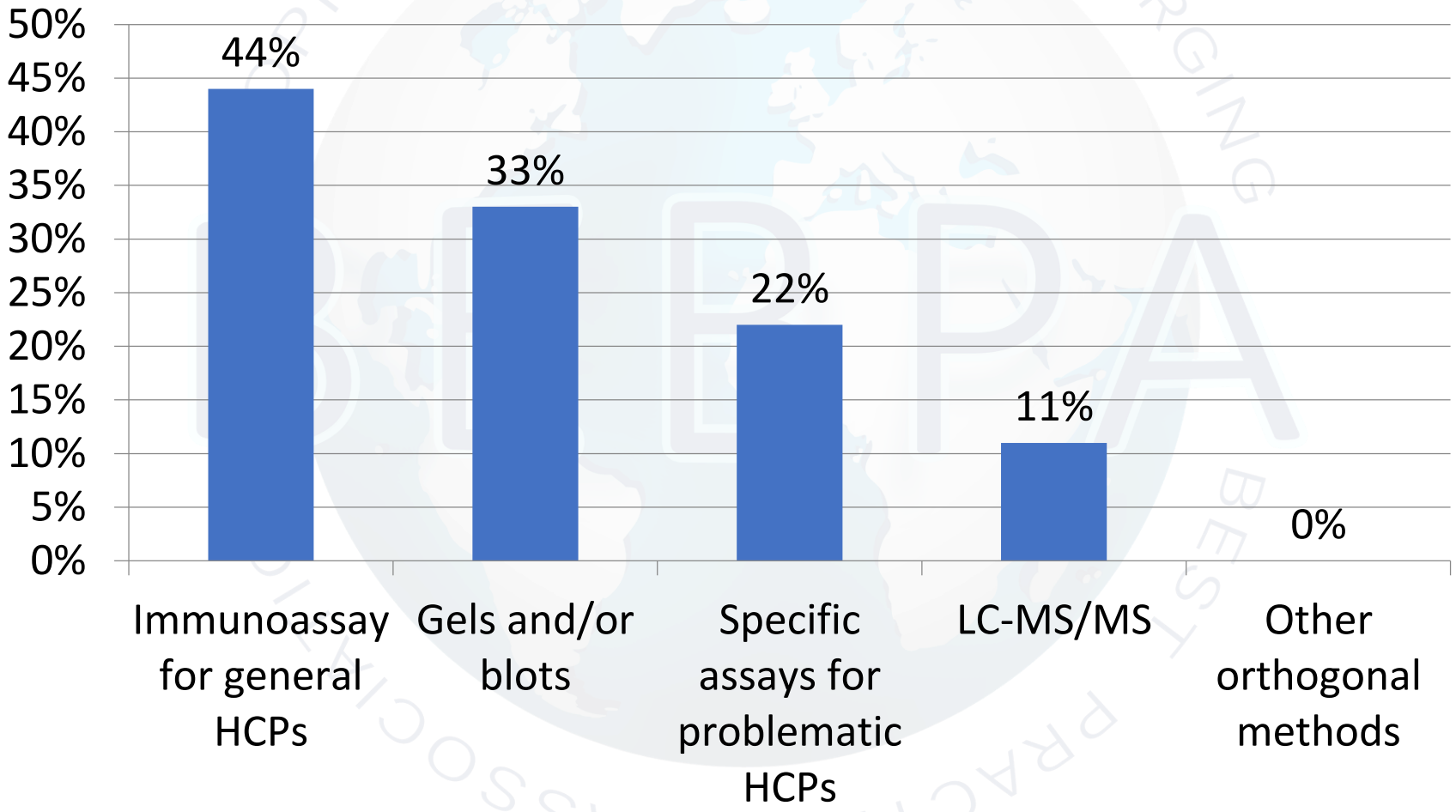
In the GMP Control Systems, We Have Examples Where We Test Lots by (check all that apply):

1. Immunoassay for general HCPs
2. Gels and/or blots
3. Specific assays for problematic HCPs
4. LC-MS/MS
5. Other orthogonal methods

Multiple responses are allowed

Lot Testing Format



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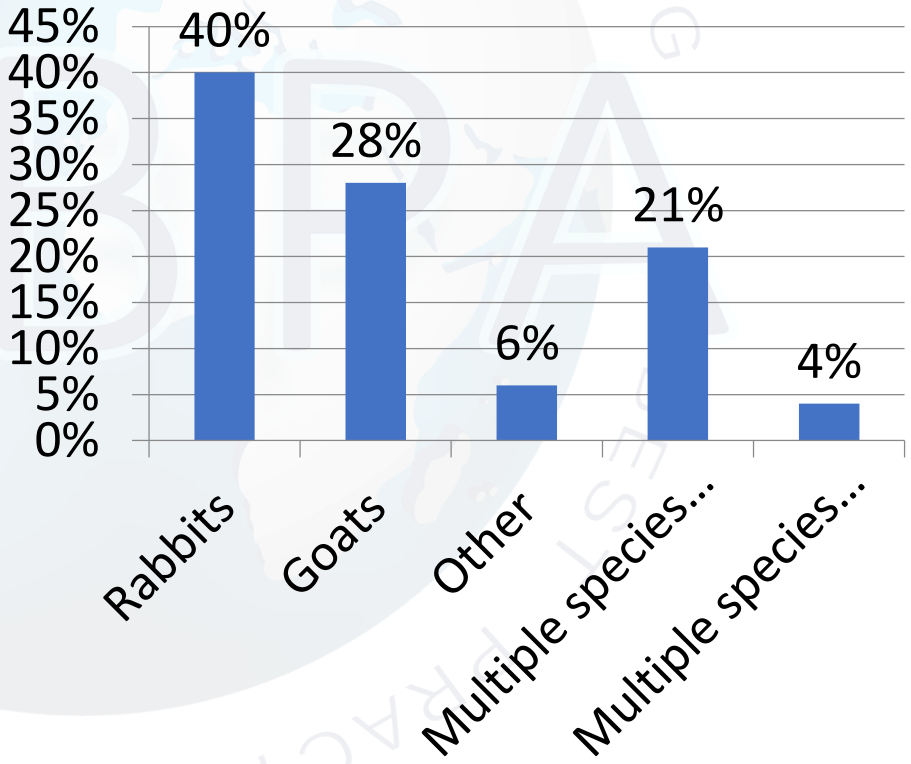
For Immuno-HCP Assays, What Species are Routinely Immunized?

1. Rabbits
2. Goats
3. Other
4. Multiple species are immunized and we select one to take forward for assay development
5. Multiple species are immunized and antibodies are combined to generate a multi-species assay



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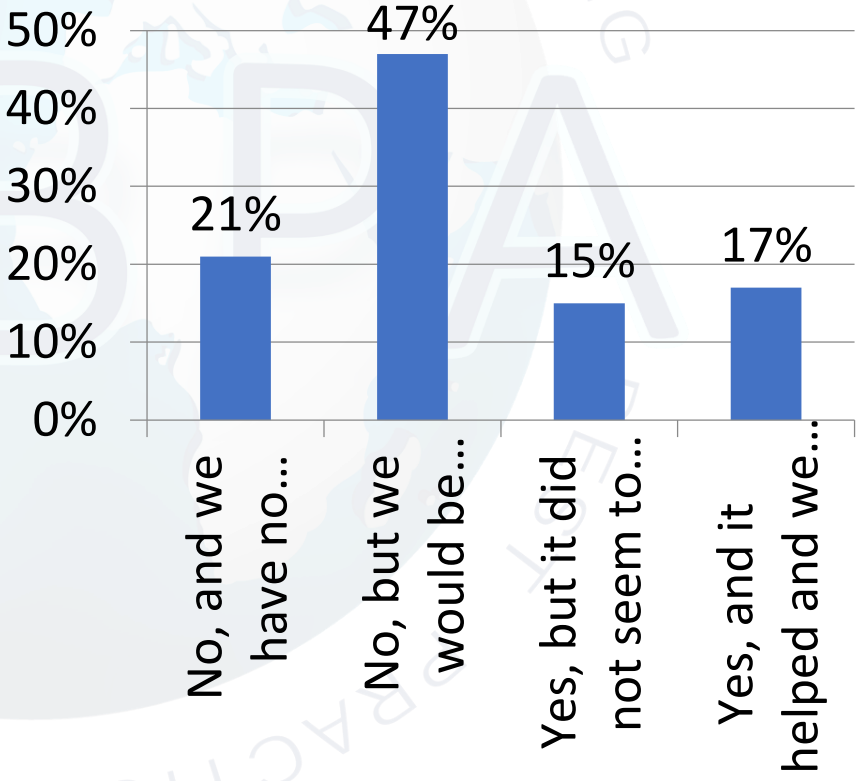
Do you have experience with cascade immunization to enhance response to weak immunogens?

1. No, and we have no interest in this approach
2. No, but we would be interested in considering it
3. Yes, but it did not seem to help and we do not routinely use it
4. Yes, and it helped and we do use it routinely



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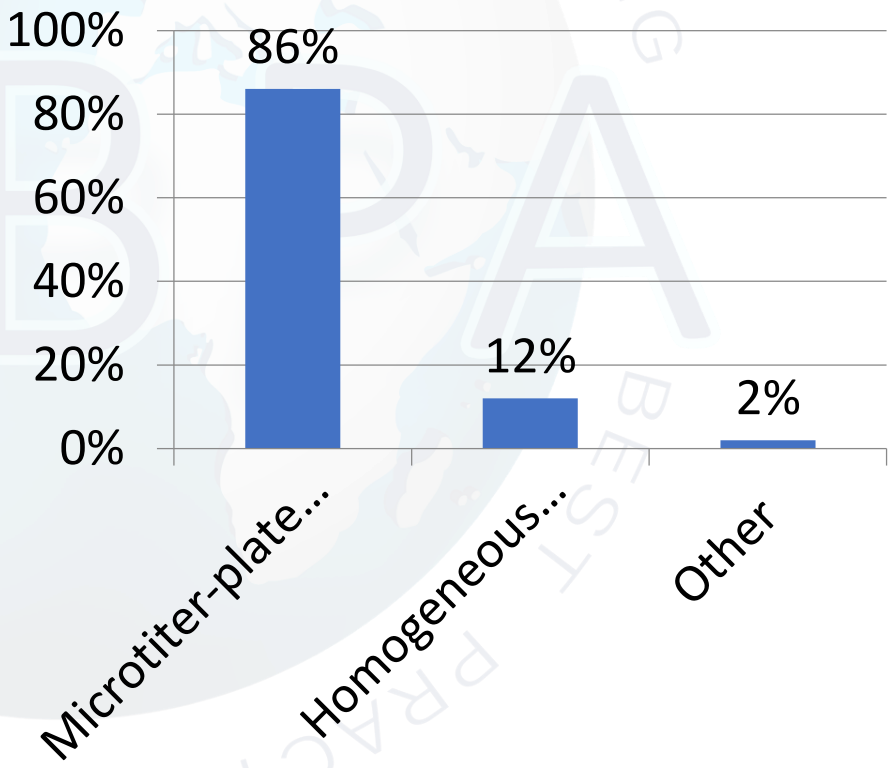
What is Your Most Common Immunoassay Format?

1. Microtiter plate-based immunoassay with wash steps between reagents
2. Homogeneous immunoassay with where all reagents are combined in the same tube or well without intermediate washing (antibodies may be free in solution, or immobilized on carrier beads).
3. Other



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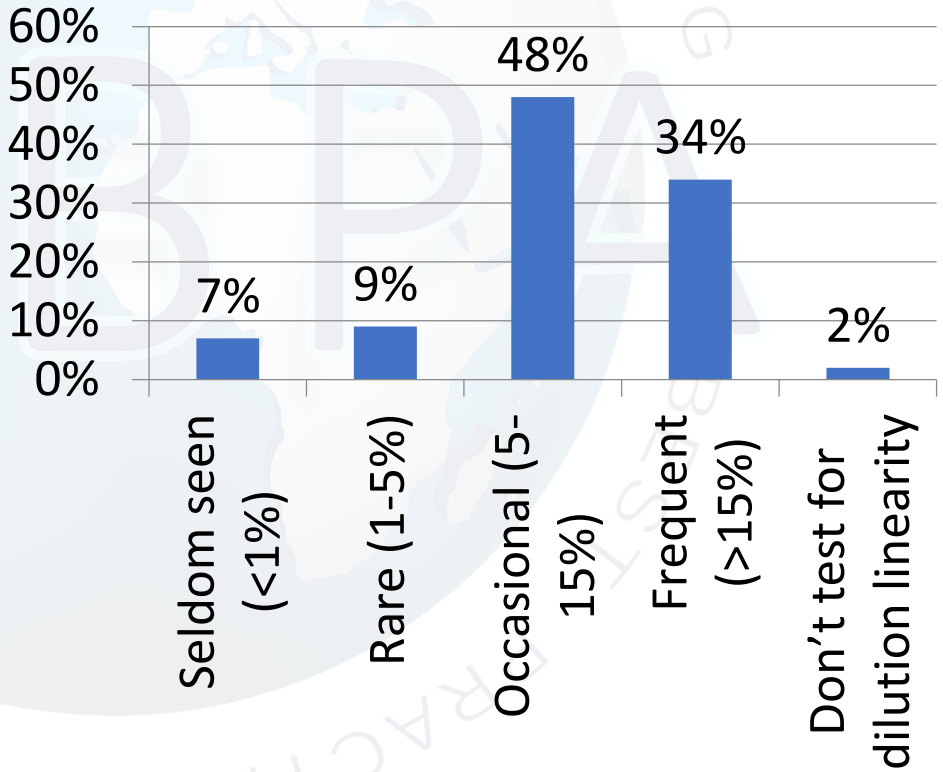
Non-Linear dilution: What is the approximate frequency of samples where you observe non-linear dilution?

1. Seldom seen (<1%)
2. Rare (1-5%)
3. Occasional (5-15%)
4. Frequent (>15%)
5. Don't test for dilution linearity



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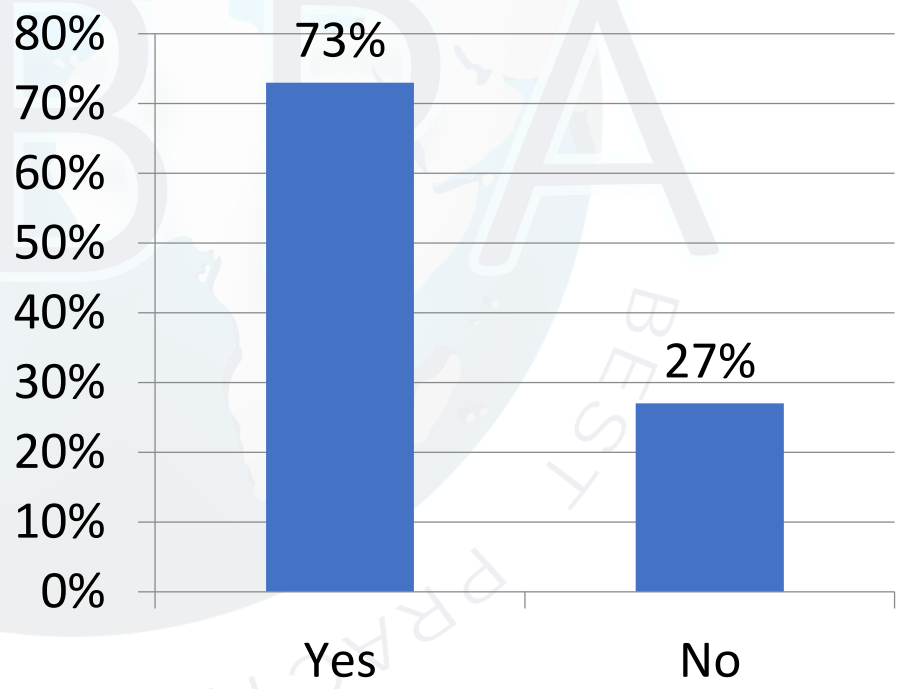
Do you have ready access to a Mass Spec lab for identifying individual HCPs impurities in products and/or characterizing your HCP standards and immunogens?

1. Yes
2. No



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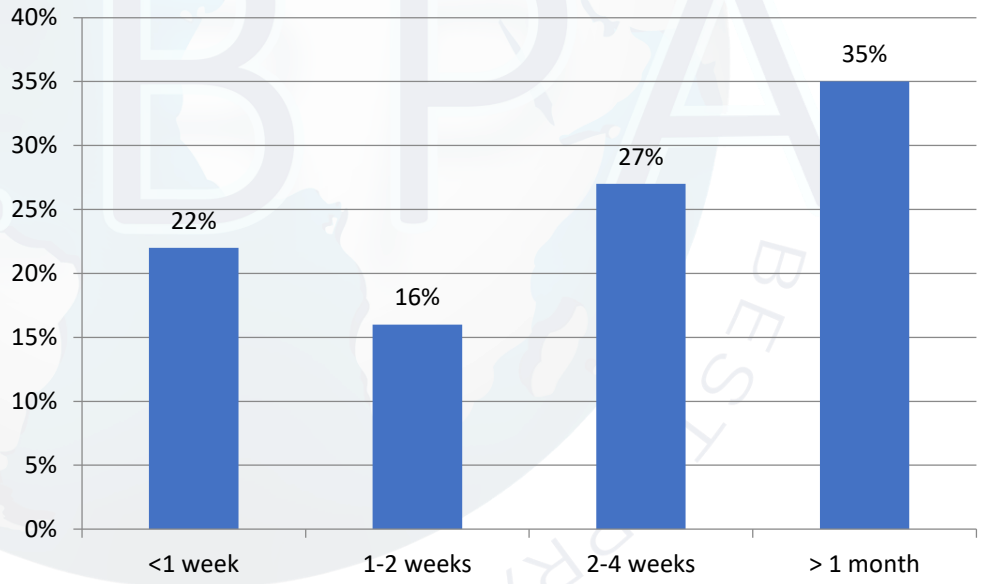
Overall throughput: To analyze 100 samples for a known HCP impurity, the typical time taken from getting the samples to returning values to the customer would be:

1. <1 week
2. 1-2 weeks
3. 2-4 weeks
4. > 1 month



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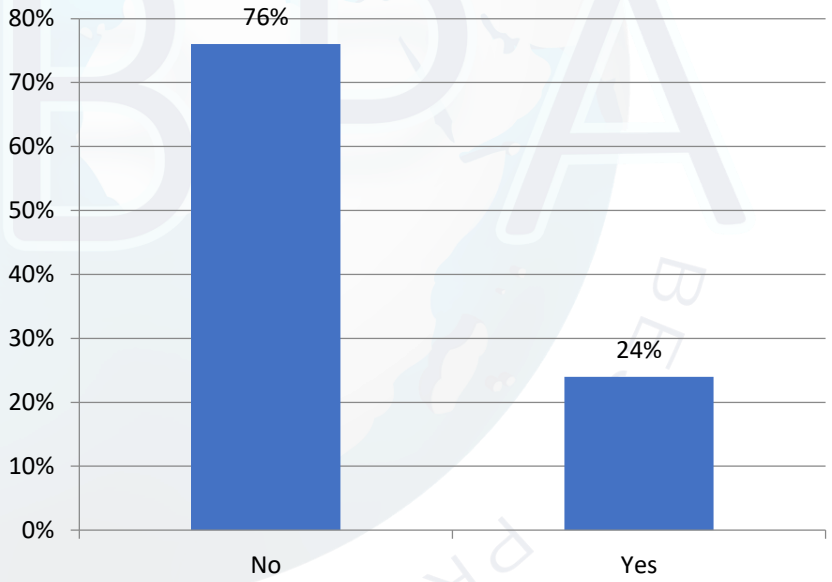
Have you ever had to delay or modify a clinical program because of an HCP discovered after patients had begun being exposed to a drug?

1. No
2. Yes



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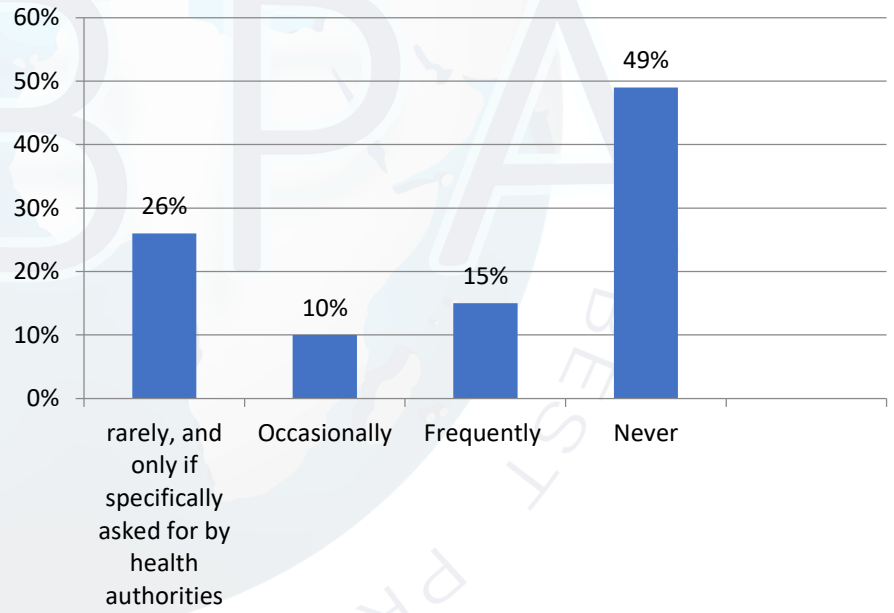
Is Testing of Patients for Anti-HCP Antibodies Part of Your Clinical Trial Design?

1. Rarely, and only if specifically asked for by health authorities
2. Occasionally
3. Frequently
4. Never



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Have you obtained commercial products from other companies and tested them for HCPs by any analytical method?

1. No
2. Yes, in making biosimilars, we benchmark purity against the originator
3. Yes, we are benchmarking our analytical methods
4. We are a CMO or CTO and test others products