

clean cells

SOLUTION FOR BIOLOGICS

VETERINARY FRAMEWORK: GMP CHARACTERIZATION OF BIOLOGICS

Clean Cells is a **GMP-licensed** company dedicated to support the biopharmaceutical industry. We are able to support you all along your project for the development of **veterinary bioproducts** [from the research banks (cells and viruses) to the final vaccine product] with our extensive range of validated tests in compliance with the current guidelines.

STICKY NOTES FOR YOUR PROJECT TO MAKE IT EASIER

YOUR PROJECT

- Which rules among EP, EMEA and US Guidelines?
- Risk analysis?
- What is your testing strategy?

YOUR CELL BANK

- Species?
- Endogenous retrovirus?
- Toxicity effect?
- Contaminants to detect?

YOUR VIRUS SEED/VACCINE

- Endogenous retrovirus in the productive cell line?
- Antiserum available?
- Cell lysis during the production?
- Cytopathic effect?
- Contaminants to detect?



SPECIES LISTED IN THE GMP GUIDELINES

Feline	Avian
Canine	Bovine
Salmonids	Ovine/Caprine
Primates	Porcine
Rodent	Rabbit
Finfish	Equine

REGULATORY COMPLIANCE WITH

- European Pharmacopeia: Chapters §5.2.4, §5.2.5 and 0062
- EMEA: CVMP reflection paper (2010 and 2015)
- US Guidelines: 9CFR 113.46, 47, 52, 53 and 55



TESTING STRATEGY

- Strategy defined by sponsor and its risk analysis on the basis of supportive data (literature, internal data, reflection paper)
 - List of contaminants to target based on the origin species of the productive cell line and the recipient species
- chapter EP 5.2.5



PANEL OF TEST FOR BIOLOGICS USED FOR VACCINE PRODUCTION

- General microscopy
- Karyotype
- Identification of species
- Bacteria and fungi, mycoplasmas
- Extraneous Agents detection
- Retrovirus detection
- Tumorigenicity



MANAGEMENT OF EXTRANEOUS AGENTS DETECTION

For cell bank and virus seed with antiserum

- Cell amplification for 28 days (for cell bank)
- Detection of cytopathic and haemadsorbing agents by coculture for 14 days or 28 days on permissive cell lines: validated cell models to cover most of the species
- Additional step depending on the targeted viruses: qPCR as a read-out after co-culture or direct on the samples
- Complementary testing: *in vivo testing*

For virus seed without antiserum

- qPCR direct on the samples: more than 250 validated PCR available



MANAGEMENT OF RETROVIRUSES DETECTION

For cell bank without endogenous retroviruses and virus seed:

- Detection of reverse transcriptase activity (Q-PERT)
- With or without a spike of thymus DNA if expected cell lysis during the production process

If positive signal of the Q-PERT, for cell bank with endogenous retroviruses or for virus seed with antiserum:

- Transmissibility assay on target cells with Q-PERT as read-out



OTHER SERVICES

- **Development and validation of new qPCR** for specific contaminant detection for further GMP testing
- One stop shop solution including **non-GMP or GMP manufacturing** Master and Working cell and seed banks

