

# PATHKINEX UPDATE

## PathKinex™ Live

A *global* PathKinex™ platform

### Pathkinex™ Live: First Successes



PathKinex™ Live is our new global PathKinex™ platform that allows customers to understand the power of United Animal Health (UAH) direct-fed microbial (DFM) products against pathogens isolated from their own regions. PathKinex™ Live is the international counterpart to the domestic antimicrobial susceptibility testing (AST) that we perform here at Microbial Discovery Group. However, PathKinex™ Live is unique in that international laboratories perform the AST themselves to generate real-time results from their own farms or customers' farms.



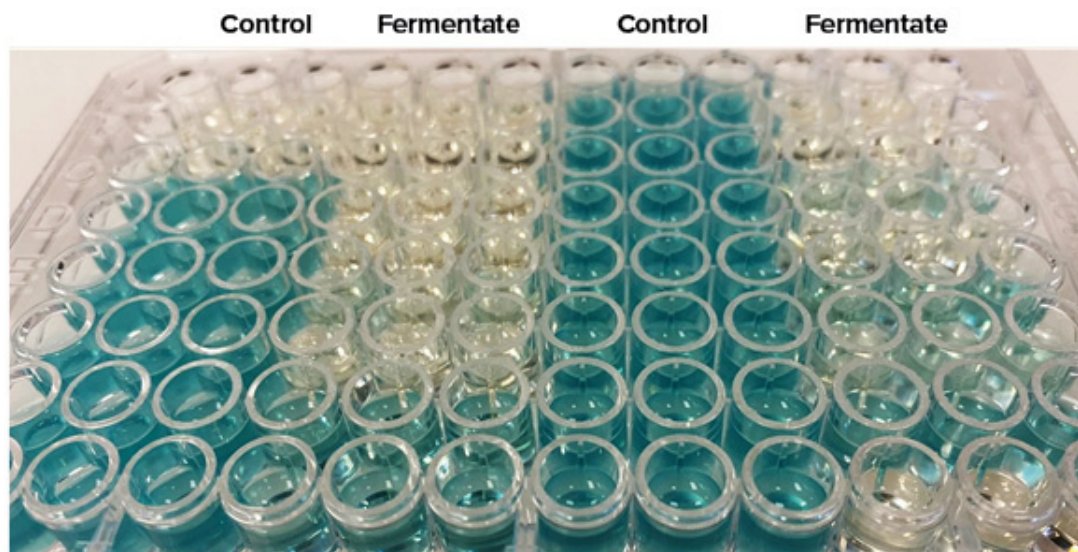
### How does Pathkinex™ Live work?

The PathKinex™ Live method involves testing the ability of Novela®ECL, Provent®ECL, or Strateris® *Bacillus* fermentate to inhibit the growth of international bacterial pathogens in liquid AST. The *Bacillus* fermentate includes

antimicrobials and other molecules that each *Bacillus* in the product produce as they grow, but it contains no living organisms. By comparing the growth of pathogens within control media or media containing the *Bacillus* fermentate, we can calculate how well our products inhibit the international pathogens (Figure 1).

In our traditional domestic AST, we assess the impact of each individual *Bacillus* strain on pathogen growth. PathKinex™ Live takes a holistic approach and examines the efficacy of the overall product blend against a pathogen isolate, making it a faster and easier process for the international labs. Both processes, while not directly comparable, provide a good indication of the product's ability to inhibit a range of pathogen isolates.

PathKinex™ Live has been implemented at multiple international laboratories with great success. The labs have become comfortable with the procedures in a short amount of time and continue to share their results with the MDG team. With this data, we can gain insights into our products' efficacy against pathogens across the globe. Right now, PathKinex™ Live is optimized for *E. coli* and *Salmonella*, but more pathogen updates are in the pipeline!



**Figure 1.** High-throughput PathKinex™ Live AST showing strong *E. coli* growth in the columns containing control media (indicated by the dark blue color) vs. inhibited *E. coli* growth in columns that contain *Bacillus* fermentate (indicated by the lighter blue or yellow color).



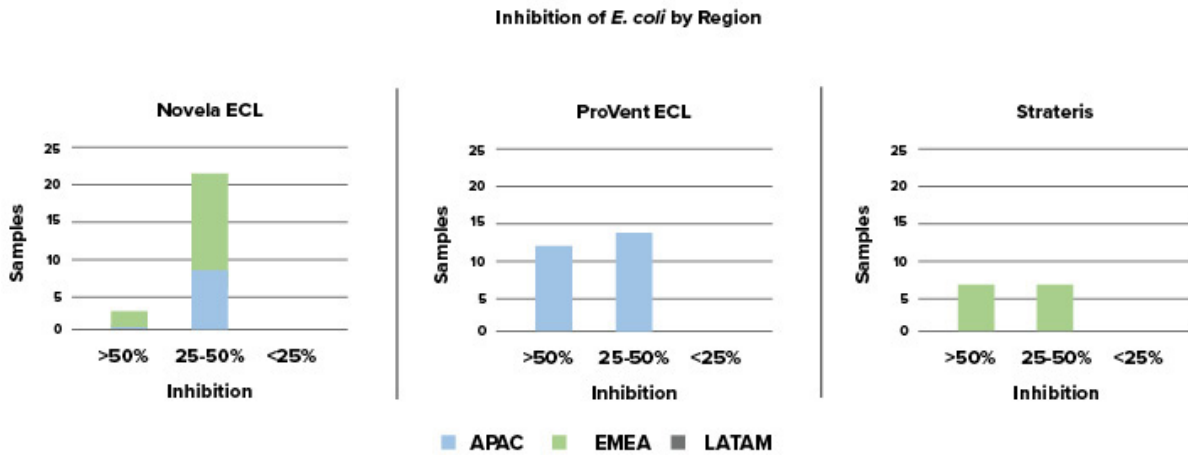
## Pathkinex™ Live and *E. coli*

So far, 66 *E. coli* isolates have been tested by international labs and they have all shown susceptibility to UAH DFM products. Novela®ECL *Bacillus* fermentate, for example, showed inhibition of all 25 poultry *E. coli* isolates from the Asia-Pacific (APAC) and Europe, Middle East, and Africa (EMEA) regions, with an average inhibition of 45% overall. Novela®ECL has displayed 25–50% inhibition against the majority of the poultry isolates and greater than 50% for the remaining isolates (Figure 2). This is very promising for the combination Novela®ECL activity because each unique strain has varying antimicrobial efficacy.

Provent®ECL fermentate exhibited an average inhibition of 50% against 27 swine *E. coli* isolates from the APAC region. 13 isolates were inhibited greater than 50% and 14 were inhibited between 25% and 50% (Figure 2).

Similarly, Strateris® displayed strong inhibition of all 14 ruminant *E. coli* isolates from the EMEA region, with an average inhibition of 52%. The growth of seven

isolates was inhibited greater than 50%, while the other seven isolates were inhibited between 25% and 50% (Figure 2).

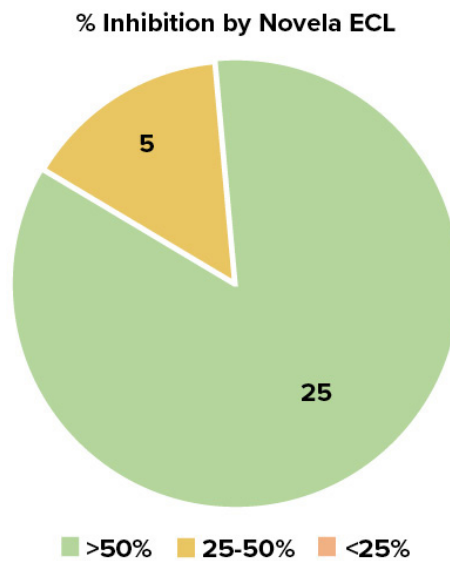


**Figure 2.** Inhibition of *E. coli* by UAH DFM product fermentate across international regions. Note: Results have not yet been obtained from LATAM.



## Pathkinex™ Live and *Salmonella*

PathKinex™ Live has been performed with 30 poultry *Salmonella* isolates from the APAC region to date, and Novela®ECL has demonstrated excellent inhibition. The growth of 25 isolates was inhibited more than 50% by NovelaECL fermentate, while only five were inhibited between 25% and 50%, averaging 57% overall (Figure 3). Importantly, multiple isolates were serotyped as *Salmonella* Enteritidis and Typhimurium by the international lab. Out of these serotypes of major concern, nine out of eleven were inhibited greater than 50%.



**Figure 3.** Inhibition of *Salmonella* isolated from the APAC region by Novela ECL® fermentate.



## Key Takeaways

PathKinex™ Live has brought about crucial opportunities for collaboration with both key customers and thought leaders in the poultry, swine, and ruminant industries across the globe. Currently, we have important partnerships in place in the APAC and EMEA regions and are implementing PathKinex™ Live in the LATAM region as well.

PathKinex™ Live is a valuable tool that can provide insight beyond single pathogen challenges. As our knowledge of coinfections continues to expand, tools like PathKinex™ Live can help bring awareness to this topic and show customers the power of our DFM products against multiple pathogen species.



## Question to consider:

What additional pathogen species are of high importance for your customers?

**RESPOND TO MDG**

**For more information about the activity of our products against U.S. pathogens, check out these materials on Seismic!**

Novela ECL (slide 5-6): [Novela Platform Overview deck 2023 \(seismic.com\)](https://seismic.com).

ProVent ECL: [ProVent ECL PPT - Co-Challenge Situations \(seismic.com\)](https://seismic.com).

Strateris: [Strateris and competitor AST UAH 3.28.24 \(seismic.com\)](https://seismic.com).



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