UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Centro Avanzado de Microbiología de los Alimentos

C.A.M.A.

Mayo 2014

- Situado en Edificio 9B, campus de Vera
- Constituido en 2003
- 15 miembros pertenecientes al Departamento de Biotecnología
- Contacto: Manuel Hernández mhernand@btc.upv.es
- Análisis microbiológicos de aguas y alimentos
- Convenio con Consellería de Sanitat para impulso de investigación en SG y desarrollo de nuevas tecnologías en MA desde 2004
- Centro autorizado por Consellería de Sanitat (nº LA\229) desde 2006
- Centro miembro de la plataforma para la investigación en Seguridad Alimentaria de la DGSP desde 2008
- Asesoría a empresas agroalimentarias
- Colaboración institutos afines: IIAD, IAMA, IATA, ICTA….

Detección y caracterización de bacterias patógenas en muestras ambientales y alimentos (M.A. Ferrús)

- Técnicas moleculares (RT-qPCR, FISH, DVC-FISH)
- *Arcobacter*, *Helicobacter*, *Listeria*, *Campylobacter*, *Vibrio* (aguas)
- *Salmonella*, *Listeria*, *E. coli*, *Arcobacter*, *Helicobacter* (alimentos)

Caracterización y viabilidad de probióticos (J. García)

- Técnicas moleculares (PCR, FISH, DVC-FISH)
- *Lactobacillus, Streptococcus, Bifidobacterium* (yogures)

Estudios de actividad antimicrobiana de componentes alimentarios (A. Jiménez)

- Técnicas convencionales
- Especias, extractos, colorantes, aceites esenciales, miel

Efectividad de la desinfección. Transferencia de patógenos por contaminación cruzada (S. Botella)

- Técnicas convencionales
- Vegetales y Carnes

Resistencia a antibióticos de patógenos alimentarios (A. Jiménez)

- Técnicas convencionales
- Agua, carnes y aves

Detección micotoxinas en alimentos (R. Montes)

- Técnicas inmunológicas
- Cereales, chufa

Toxicidad de hormonas y fármacos (M.A. Castillo)

- Técnicas modernas
- Aguas tratadas y naturales

Detección y caracterización de bacterias alterantes de productos alimentarios (M. Hernández)

- Técnicas convencionales y modernas
- *Alicyclobacillus* en vegetales y zumos de fruta

Caracterización de bacterias termorresistentes y estudio de vida útil de productos alimentarios (M. Hernández)

- Técnicas convencionales (capilares) y modernas (Mastia)
- Esporas de *Bacillus* en horchata, ajo blanco, zumos y gazpachos

Control microbiológico de aire y superficies (R. Montes)

- Técnicas modernas (S.A.S., RODAC , Petrifilm)
- Industrias AG, guarderías, comedores, museos, iglesias,

Conservación de cueros bovinos frescos y control de su alteración (M. Hernández)

- Técnicas convencionales
- Cueros de vaca para curtidos

Fisiopatología de la tolerancia inmune en cáncer, alergia y enfermedades autoinmunes (R. Sirera)

- Técnicas moleculares
- Heces, mucosa gastrointestinal

Biolimpieza y estudio de biodeterioro de obras de arte (R. Montes)

- Técnicas modernas
- Pinturas murales

NEWS OF THE WEEK

BY THE NUMBERS

12,000–24,000 Tons of plastic that deep-dwelling North Pacific fish ingest each year, based on findings from the Scripps Environmental Accumulation of Plastic Expedition, known as SEAPLEX.

€80.2 billion Initial proposal by the European Commission for research and innovation funding in 2014–20 under the Horizon 2020 program (formerly called Framework). That would be a 46% increase over current spending.

50% Loss in the amount of land suitable for cultivating premium wine grapes in high-value areas of northern California by 2040 because of global warming, according to a projection in *Environmental Research Letters*.

>>FINDINGS

journey once again. Reporting in *Marine Ecology Progress Series*, the scientists—from Canada, the United States, Australia,

Random Sample

Miniature Art Masters

Microbiologist Rosa María Montes Estellés once infected a church mural with bacteria. But it was for a good cause: The bacteria ate their way through 4 centuries of grime encrusted on a mural at Santos Juanes Church in Valencia, Spain, exposing the underlying colors.

Bacteria are only the latest tool in the art restorer's arsenal. Restorers use microabrasion, burly bristles, and chemical washes to strip layers of pollution from buildings, statues, and paintings. But each method has shortcomings: They can put the underlying artwork at risk or poison workers, and they often require slow and painstaking manual labor. So in 2005, a group of Italian art restorers tried a new tack: They bred bacteria to remove an obstinate layer of collagen from the murals of Campo Santo di Pisa.

At Santos Juanes, the offending material was a crusty white mixture of salt, sulfates, nitrates, and carbon, originating from centuries of rainwater mixing with deposits from nesting birds and insects in the roof above the murals. Over time, the material slid downward, encrusting the paintings, where it fermented together with atmospheric pollutants. Montes and colleagues at the Polytechnic University of Valencia selected and "trained" a nitrogen-loving type of bacteria, *Pseudomonas stutzeri*, to eat the noxious blend.

How to apply the bacteria was a challenge. After testing different materials, Montes and biologist Pilar Bosch chose a gel that keeps the bacteria wet and alive but doesn't sink into the underlying paint. The team's preliminary results will appear in a forthcoming issue of *Arché*. Meanwhile, Montes hopes to develop more and better treatments customized for different surfaces and pollutants.

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