

# Ultracongeladores VIP



**Nota de Aplicación:**  
"-70°C es el nuevo -80°C"



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## -70°C es el nuevo -80°C

### La idea

Mantener su Ultracongelador trabajando de forma habitual a una temperatura de -70°C en lugar de -80 ° C tiene dos grandes beneficios: reducir el consumo de energía en un 30%, y al hacerlo así puede prolongar la vida de su congelador. Esto significa menos tiempo de inactividad y menos probabilidad de que sus muestras se vean comprometidas

### ¿ Pero es seguro almacenar mis muestras a -70°C?

En la mayoría de los casos, la respuesta es un contundente SI. Los ácidos nucleicos se pueden conservar de forma segura a -20°C, y muchas proteínas se pueden almacenar a -70°C. Virus y bacterias también están resguardadas a -70°C. De hecho, 15 años atrás todos los Ultracongeladores se programaban a temperaturas de -65°C o -70°C. El hecho de bajar constantemente hacia temperaturas mas bajas se debe mas a un tema de marketing y ventas, por la posibilidad de circuitos de frio capaces de alcanzar -86°C, que a razones científicas.

### ¿ Alguien ya lo esta haciendo?

Sí. CU-Boulder tiene el 60% de sus congeladores ultra-bajos establecidos a -70 ° C. UC Davis, Harvard, Dartmouth, UCSB y UPENN se encuentran entre varias universidades que han participado en el desafío del congelador para reducir el consumo de energía de los congeladores ultra-bajos por refrigeración hasta -70 ° C. Además, los Centros de Control de Enfermedades de los CDC aumentaron recientemente la temperatura en 60 de sus congeladores, reduciendo el consumo de energía en un 40%.

### Que tipo de muestras se almacenan usualmente?

- Ácidos nucleicos ( ARN, ADN, plásmidos.. )
- Muestras de tejidos
- Células
- Enzimas
- Proteínas
- Bacterias recombinantes



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## Bibliografía

### **Stability of Genomic DNA at Various Storage Conditions**

Wu J. et. al., Stability of Genomic DNA at Various Storage Conditions. Poster Presentation, QACO3 ISBER Meeting (2009).

This study found that genomic DNA stored at both -20°C and -80°C remained stable over 24 months and 19 freeze thaw cycles. There was no appreciable difference in the quality of the DNA and degree of degradation was very similar. The study further found that for short term studies, DNA can be stored at 4°C or even room temperature for periods less than 3-6 months.

### **Stability of Extracted RNA at Various Storage Temperatures and through Multiple Freeze-Thaw Cycles**

Wu J. et. al., Stability of Extracted RNA at Various Storage Temperatures and through Multiple Freeze-Thaw Cycles. Poster Presentation, QACO3 ISBER Meeting (2011).

This study demonstrated that the stability of purified RNA is the same when stored at either -20°C or -80°C. In both cases the RNA was stable over 10 freeze-thaw cycles and showed no change in quality in storage for one month. There was no difference in stability between -20 and -80°C.

### **Long-term stability of parameters of antioxidant status in human serum**

Jansen EH. et. al., Long-term stability of parameters of antioxidant status in human serum. Free Radic Res., Jul (2013) 47(6-7):533-40.

This study examined the temperature stability of antioxidants for 12 month sample storage. The antioxidants were applied to human serum samples and stored at -20, -70, and -196°C. The study concluded that there is no statistically significant difference in the samples stored at different temperatures. The author claims that storage at -20°C is sufficient to maintain assay outcome for most antioxidant assays, though suggests that -70/80°C may be preferred for storage times over 1 year..

### **Long-term Stability of Viral Markers in Plasma**

Garrett PE, Miller L, Anekella B, Manak MM, Long-Term Stability of Viral Markers in Plasma. Poster Presentation, Clinical Virology Symposium (2008).

This study examined the temperature storage stability of minimally processed plasma panels. The tests were conducted for anti-HIV, anti-HCV, and HBsAg over 11 to 20 years using PCR methods. Samples were stored in -20°C in cycling frost free freezers, and saw no detectable deterioration and no downward trend in reactivity.

### **Twenty Year Stability Study of HIV, HBV, and HCV Antibodies, Antigen and Nucleic Acids in Plasma**

Miller L, Anekella B, Manak MM, Garrett PE, Long-Term Stability of Viral Markers in Plasma. Poster Presentation, TTID1L Testin gIssues (Virology), AABB Annual Meeting and TXPO (2008).

This is a study of frozen human serum and plasma samples. Seroconversion panels containing HIV and HCV antibodies, HBsAg, and viral RNA and DNA were evaluated. Samples were collected between 1981 and 2000. The findings report that the Antibodies are stable in plasma stored at -20°C for 13-20 years. The RNA however has significant degradation in these storage conditions over several years, while DNA is possibly degrading.

All samples are stable for at least 10 years in long term storage at -70°C.