GOLD NANOPARTICLES (GNP's) AS MARK IN DNA PROBES TO DETECT *Achlya sp*. and *E. coli* O157:H7

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Introduction. The determination of DNA sequences from different organisms is highly relevant in different areas (1). Conventional methods for DNA analysis were based on sequencing or hybridization; however these classical methodologies become obsolete when the demand of information must be in a short time and at lower costs (2), (3). GNP's using as mark in DNA probes as a part of genosensor, are an alternative analysis that does not require professional supervision, are easy to use and if it could be mass produced at low cost (4). In this work we design a DNA specific probes to detect *Achlya sp* and *E coli* o157:H7, microorganisms whit industrial interest.

Methods.
Gold Nanoparticles (GNP's) was synthetize as (5) GNP's characterization by TEM and AFM. *Achlya sp*. and *E. coli* specific probes design using Primer-Blast (6).GNP's functionalization using specific and mark DNA probes biotinylated (7), (4).

Results. We obtained spherical GNP's of 20 nm approximately. The Figure 1 shows the GNP's synthetized and characterized by UV-Vis, TEM and AFM.

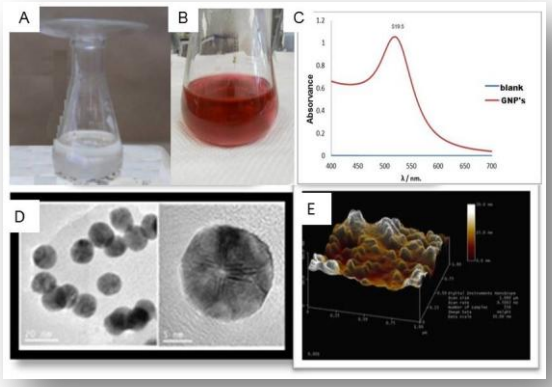

Fig.1 A, B. synthesized GNP's; C. UV-Vis spectra; D.TEM Characterization; F. AFM Characterization of GNP's

The trend is to the hybridization reaction without using outside agents and more efficient labeling of the probes (4) (3).

Table1. *Achlya sp* and *E. coli* DNA sequence to functionalize GNP´s.

Table 1. Sequence of *Achlya sp* and *E. coli* DNA probes

Microorganism	NCBI/GeneBank	Probe
E. coli 0157:H7	NZ_AERR00000000.1	5'GCACCGGA AGTACAGACC AA 3'
Achlya sp.	JQ974992.1	5'TTGCTTTGG CAAGTCCTCC T3'

Figure 2 displays the functionalizing probes DNA by nucleic acid biotinylation.

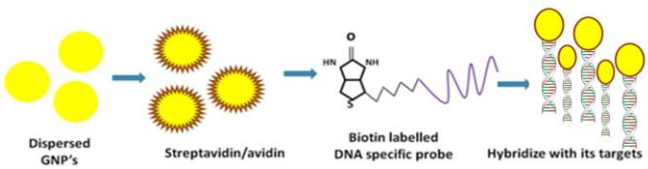

Fig.2 Functionalizing GNP´s with microorganism DNA of *Achlya sp.* and *E. coli.*

Conclusions. DNA probes are highly specific and inexpensive. GNP´s can be used as a trade mark and DNA probes are excellent tools for the rapid detection of microorganisms of industrial interest.

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