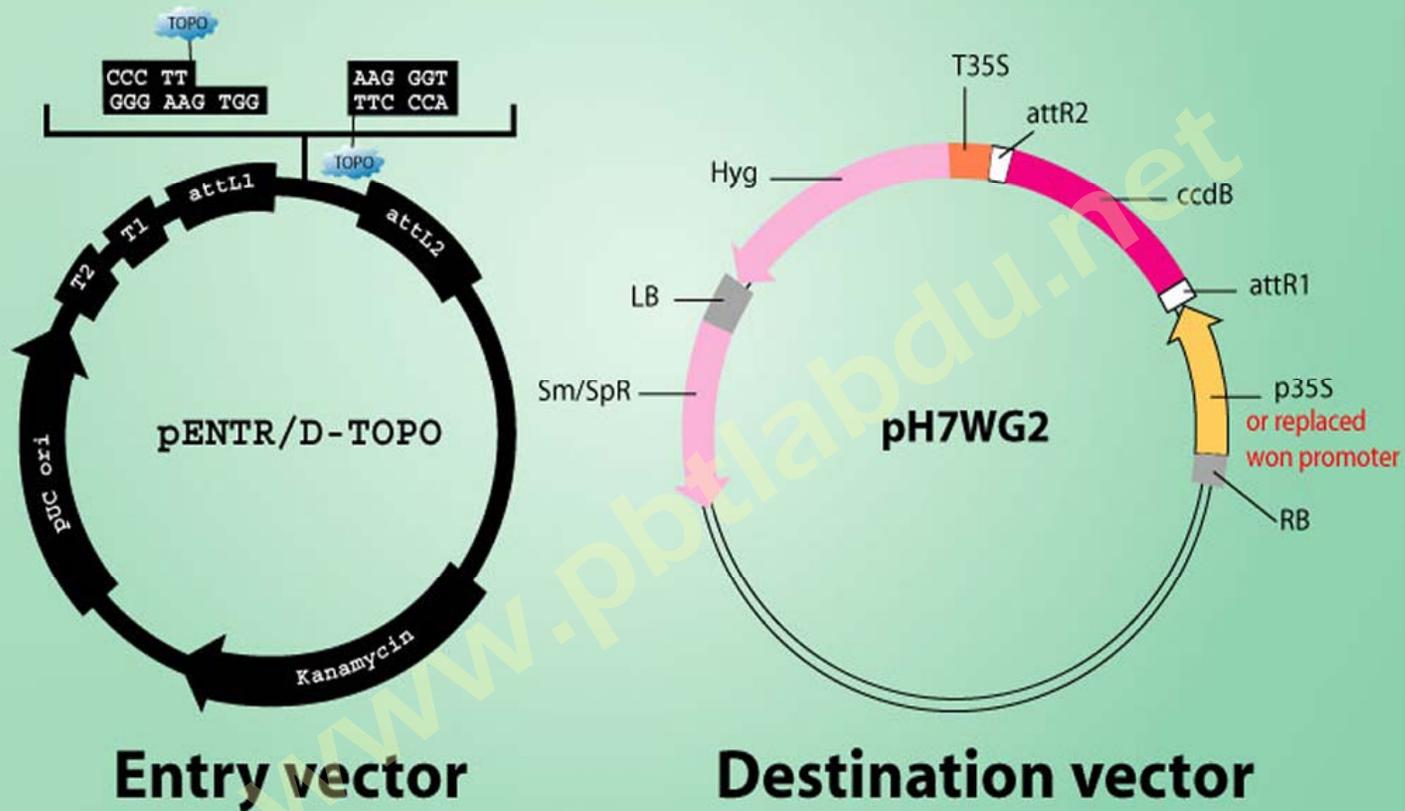
The image shows four brown ceramic bowls arranged in a 2x2 grid on a bamboo mat. The top-left bowl contains a mix of black and white rice grains. The top-right bowl contains white rice grains. The bottom-left bowl contains yellow rice grains. The bottom-right bowl contains brown rice grains. The text 'Rice Research using genetic engineering' is centered over the bowls. A faint watermark 'www.pbtlabdu.net' is visible diagonally across the image.

Rice Research using genetic engineering

Vectors in use



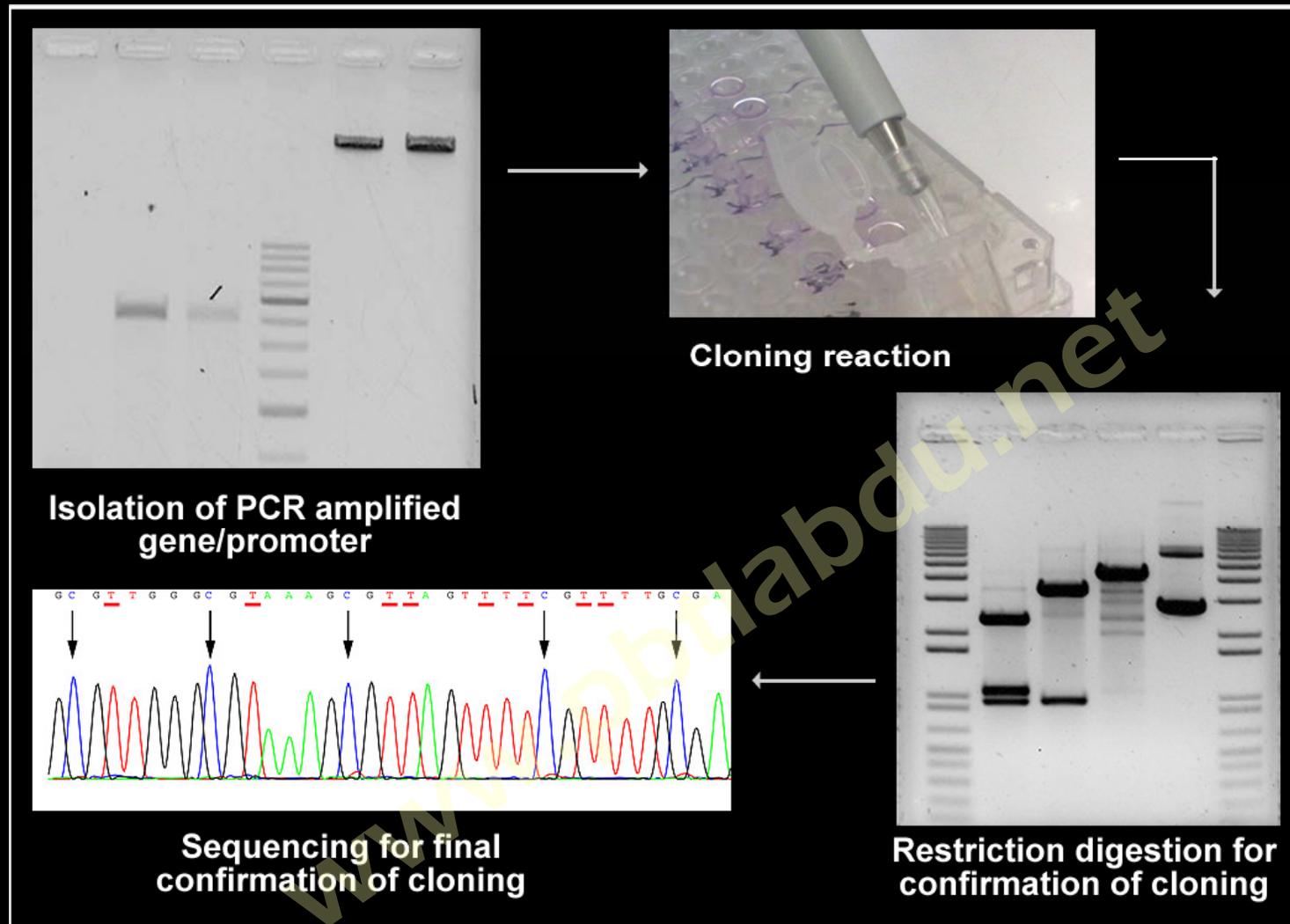
Cloning of candidate genes to engineer salt tolerant rice



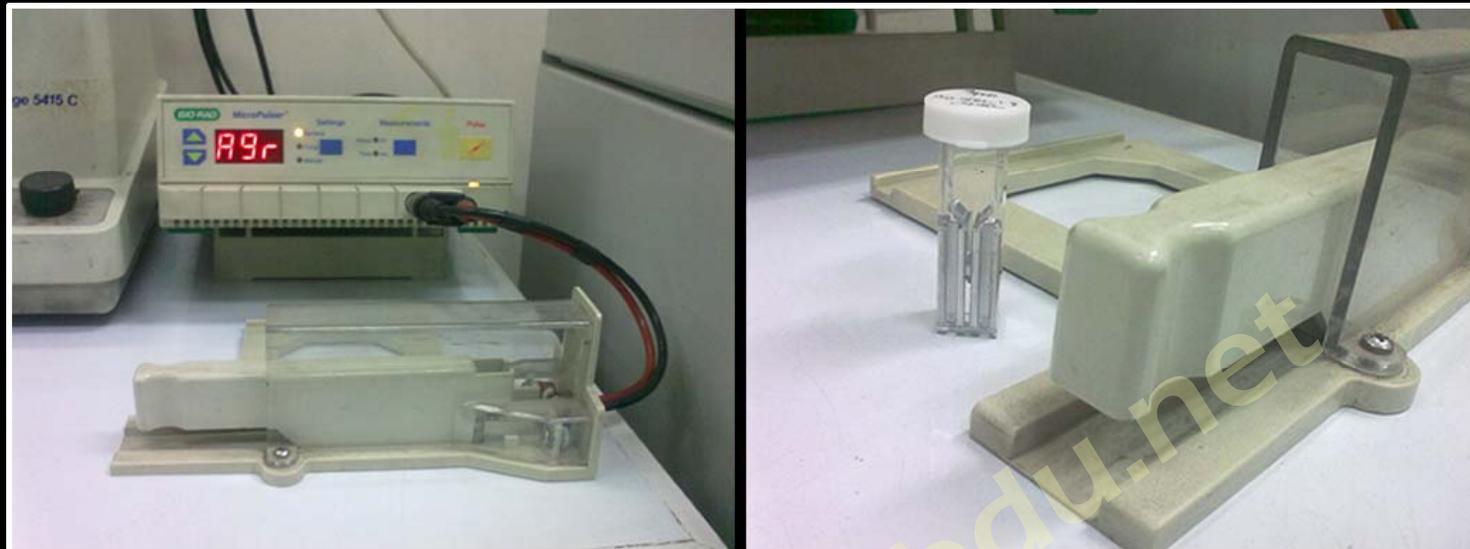
Performing cloning reaction



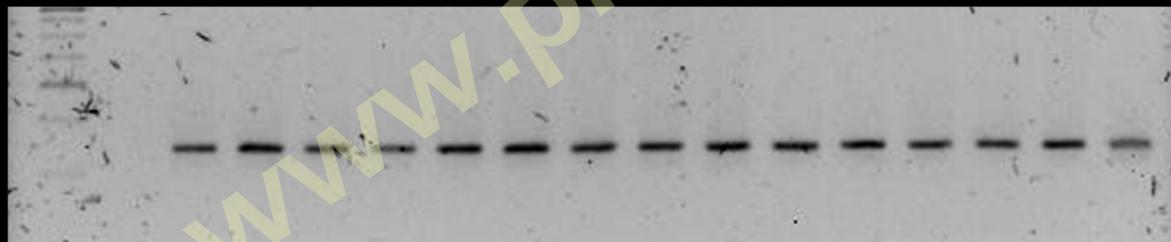
PCR and gel apparatus for amplification and confirmation



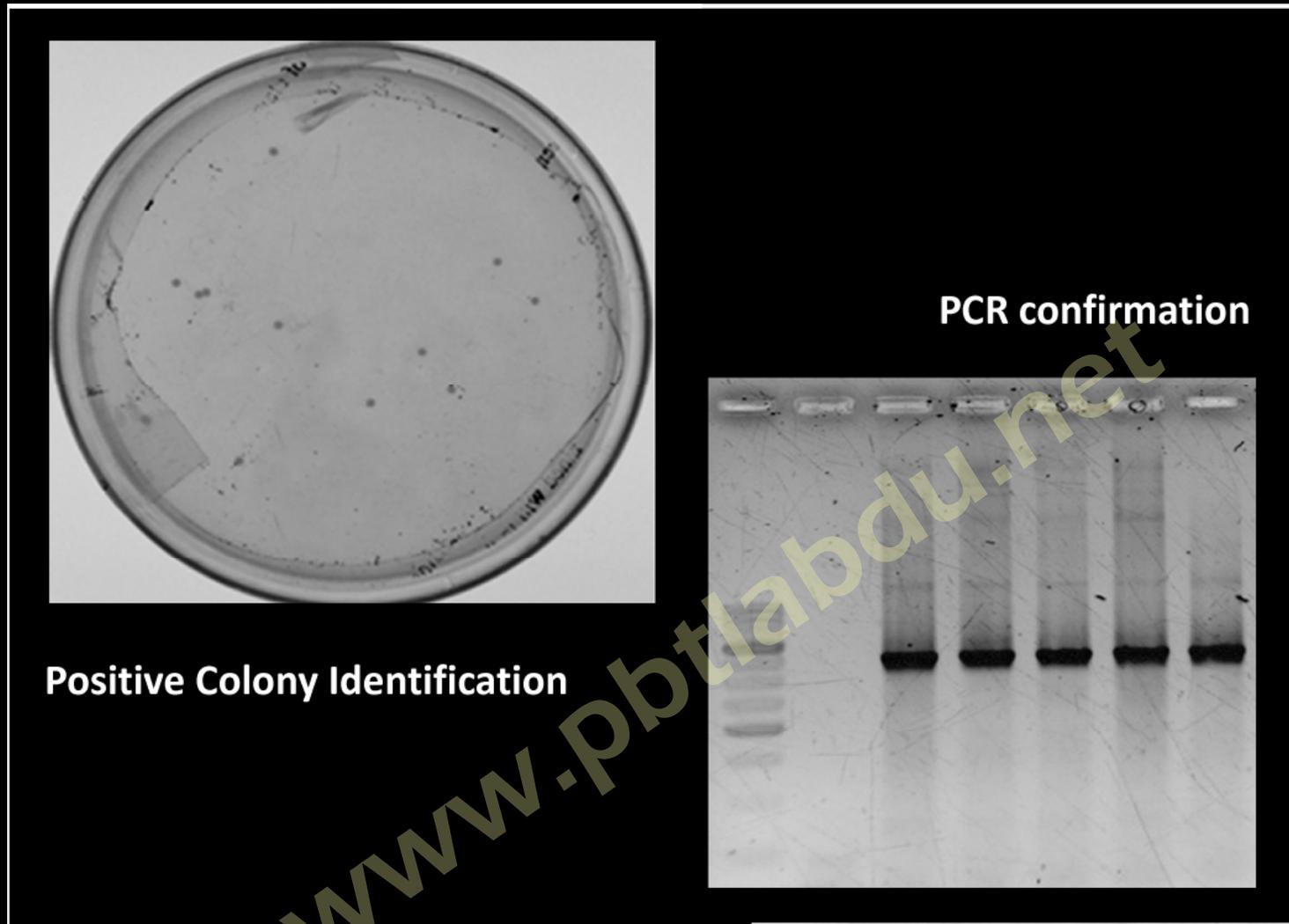
Cloning of gene of interest



Detection of positive colonies after electroporation



Transformation of Bacteria with vector containing gene of interest by Electroporation



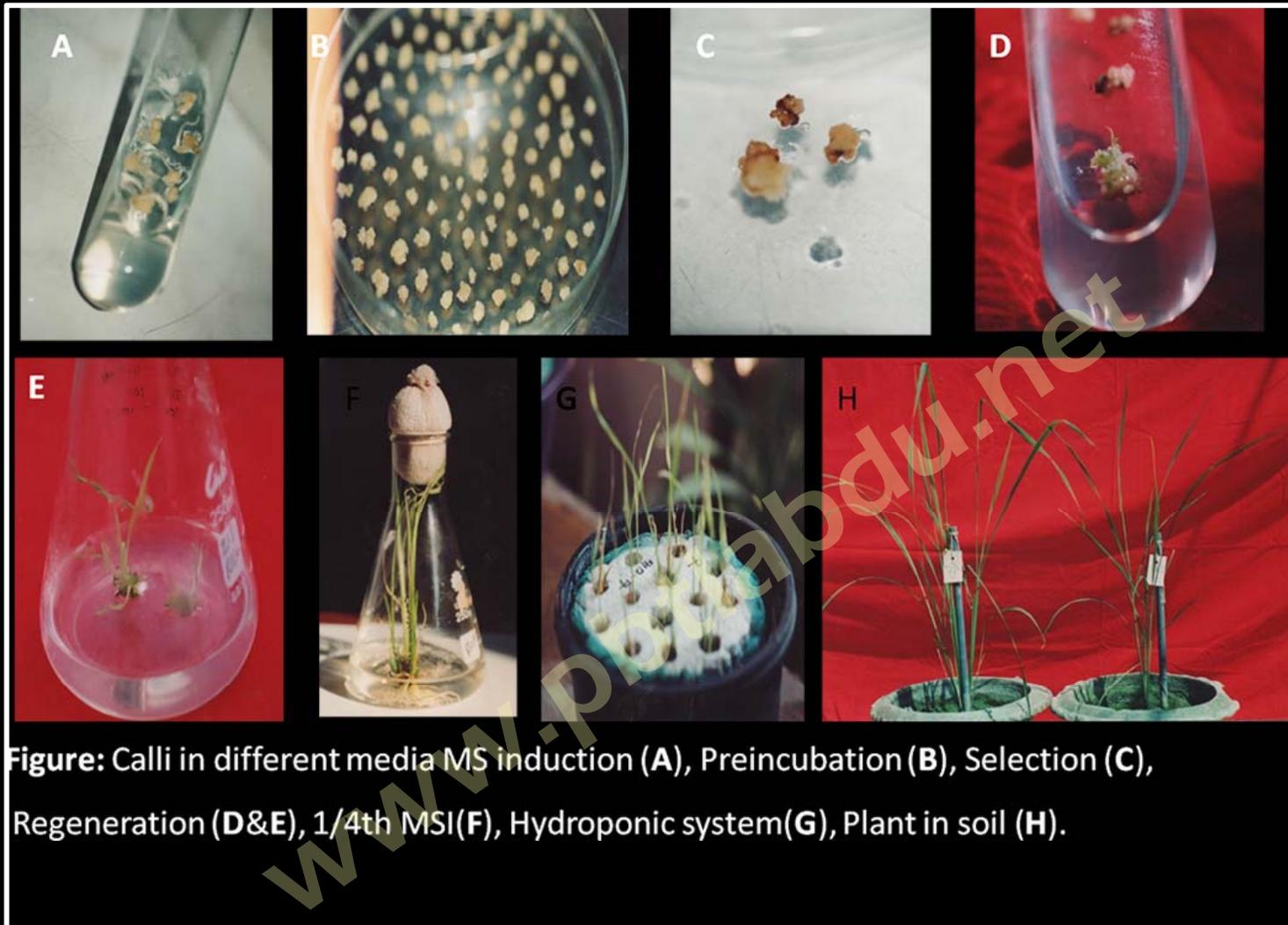
Identification of positive colony harboring expression vector with gene of interest



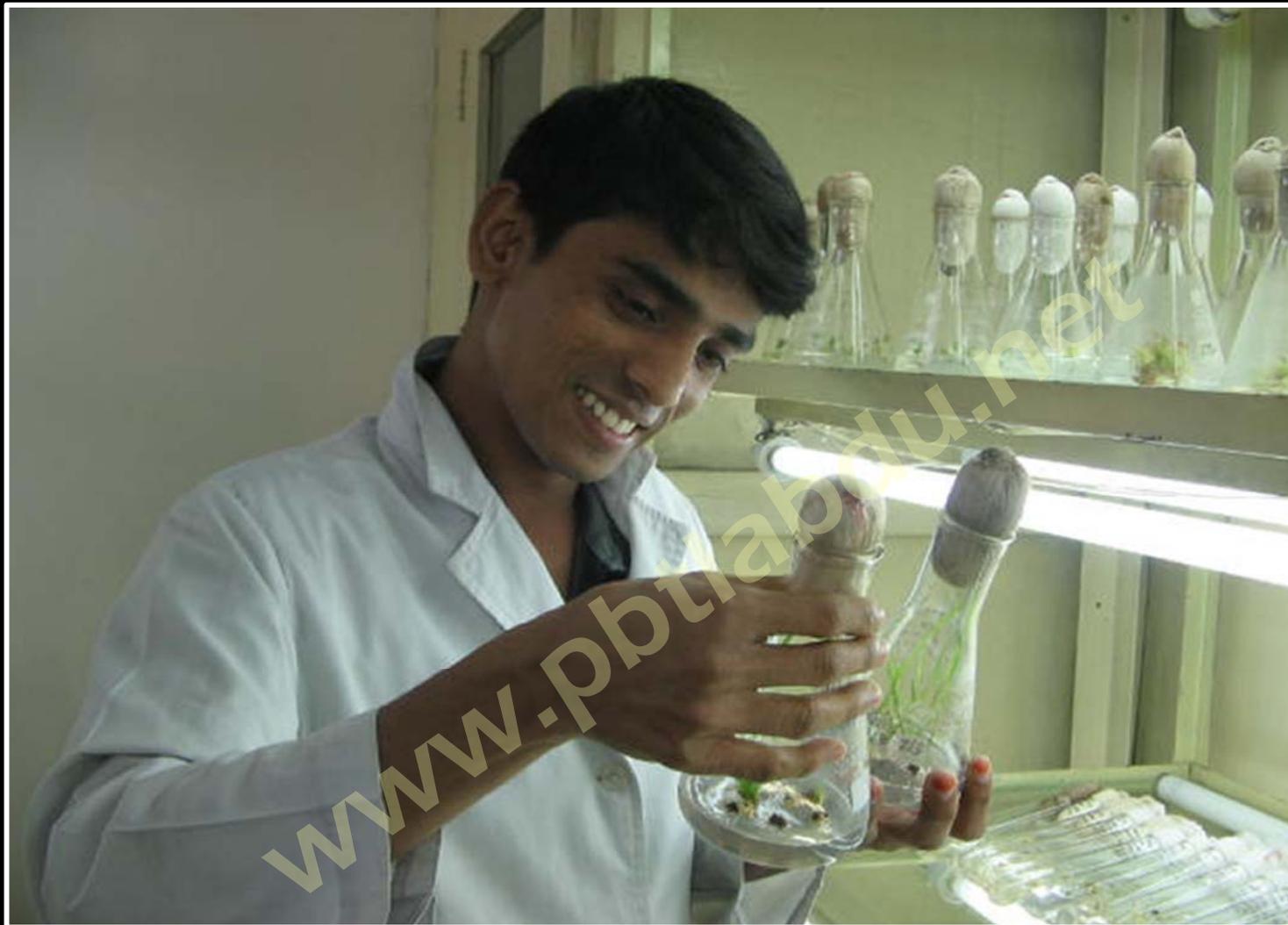
Delivering the Gene to the Rice : *Agrobacterium* mediated transformation



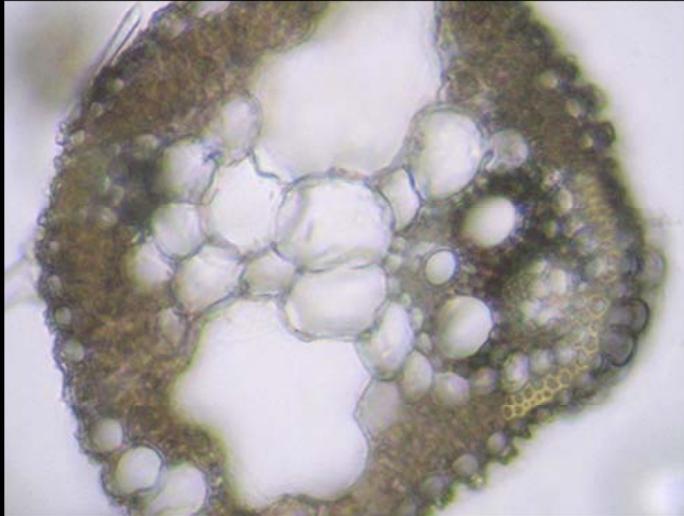
Isolation of rice calli for transformation



The different stages of transformation

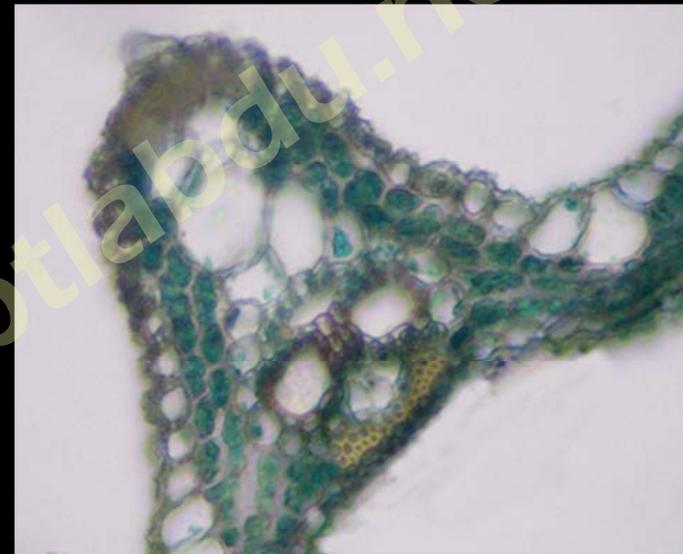


Observing successful growth of transgenic rice

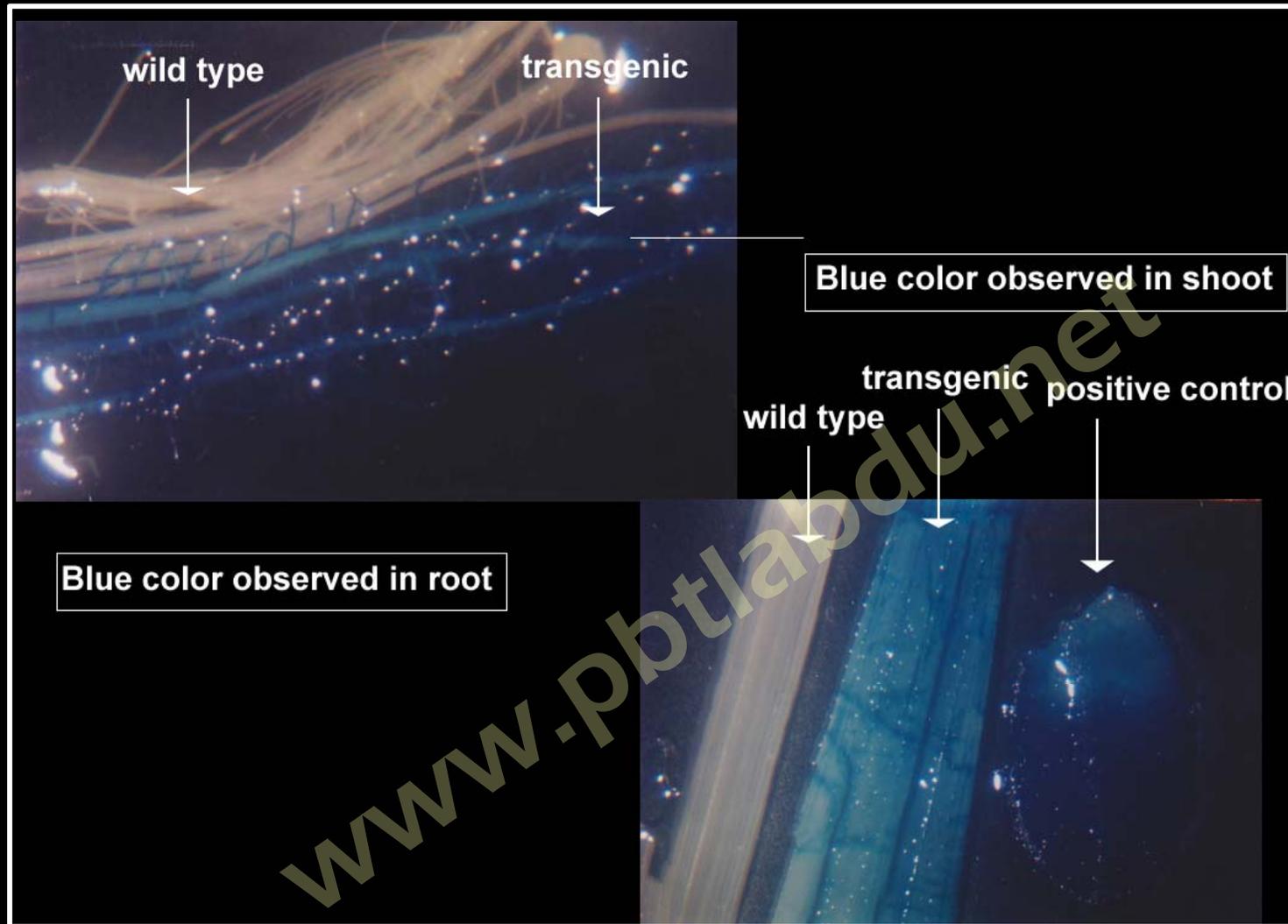


Control plant

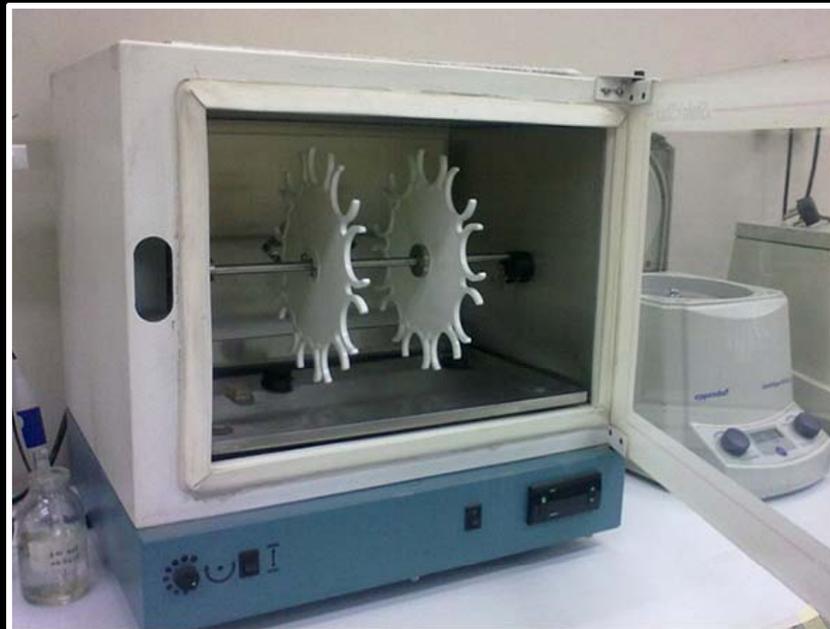
blue color observed in leaf sections from transgenic plant



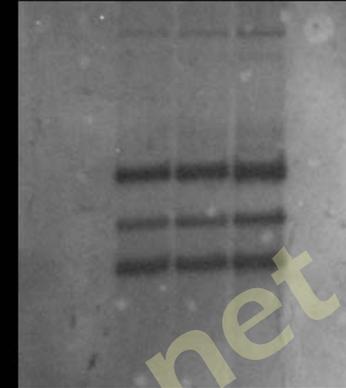
Histochemical GUS staining for promoter characterization



Histochemical GUS staining for promoter characterization



Hybridization Chamber



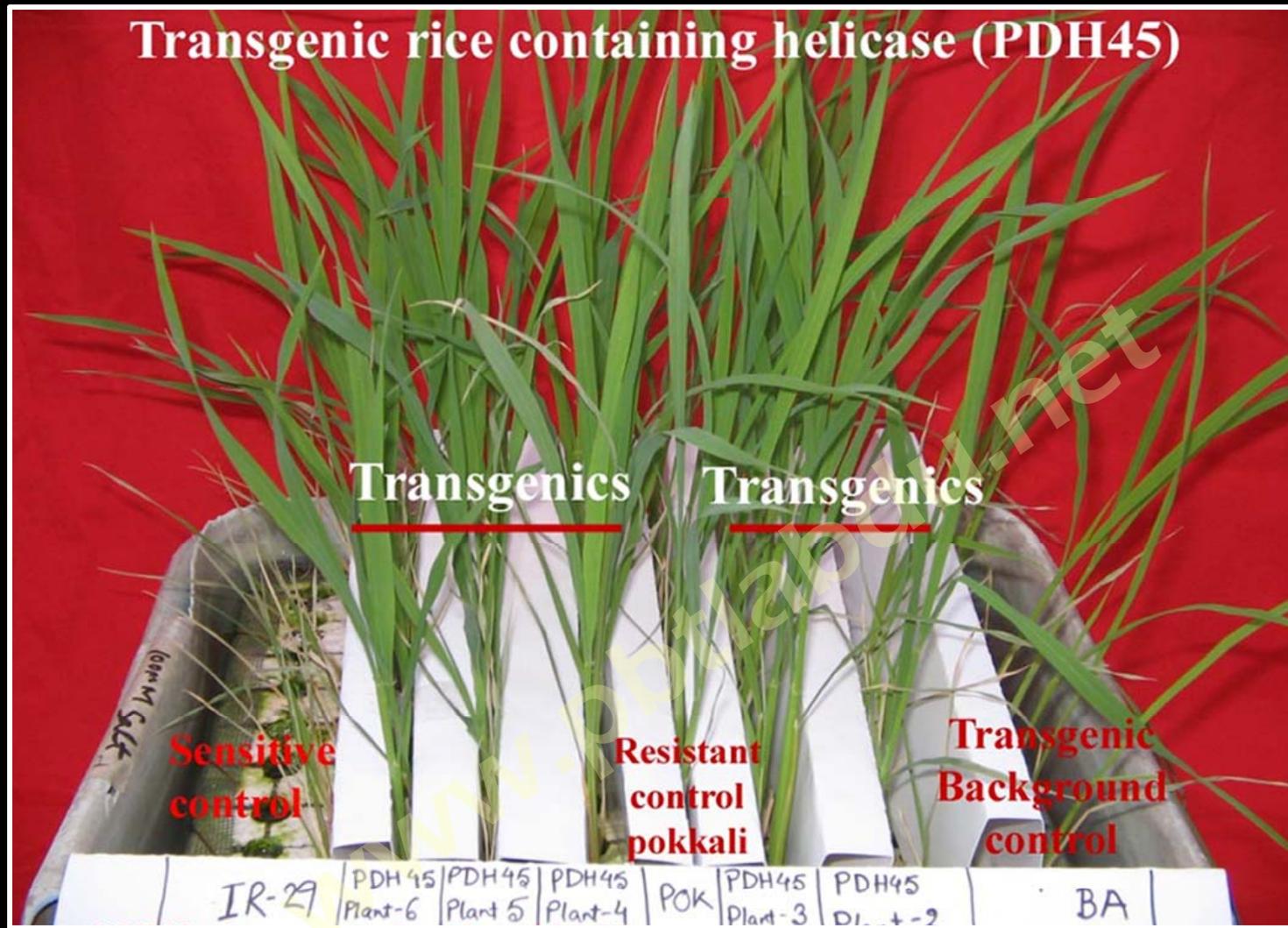
Southern blot for confirmation of insertion



Confirmation of Transgene expression: Southern and Northern blotting



Comparison between transgenic (PgNHX1) and wild type (Binnatoa) rice



Screening of transgenic rice at seedling stage



Salinity screening at reproductive stage at nethouse



Crossing of Transgenic rice with high yielding varieties



Comparison of OsNHX1 overexpressing transgenic cross plants and their parents under salt stress



Salinity Screening of transgenic cross plants



Comparison of OsNHX1 overexpressing transgenic cross plants with their parent BR28



Transgenic hybrid from crossing of BR28 and transgenic Binnatoa overexpressing OsNHX1



Transgenic hybrid from crossing of BR45 and transgenic Binnatoa overexpressing OsNHX1

Gene Constructs

-  CaMV_OsNHX1_1.9 from *Oryza sativa*
-  Actin_1D_OsNHX1_1.9 from *Oryza sativa*
-  CaMV_PgVNHX from *Pennisetum glaucum*
-  CaMV_PD45 from *Pisum sativum*
-  CaMV_glyoxalase I from *Brassica juncea*
-  PKN_OsNHX1_1.9 from *Oryza sativa*
-  CaMV_OsNHX1_2.3 from *Oryza sativa*
-  CaMV_glyoxalase II from *Pennisetum glaucum* / *O. sativa*
-  SNAC1 from Pokkali
-  Hardy from *Arabidopsis*
-  SOS1 from Pokkali
-  Edible cholera and TB vaccine on process

Rice transformation with Promoter Constructs

-  Pokkali NHX1 promoter::GUS gene
-  IR64 NHX1 promoter::GUS gene
-  CaMV35S promoter::GUS gene
-  Pokkali HKT8 promoter::GUS gene
-  Pokkali Caffeoyl-CoA O-Methyl Transferase promoter::GUS gene
-  Pokkali Ascorbate Peroxidase promoter::GUS gene
-  *Arabidopsis* Alcohol dehydrogenase promoter

Ongoing works involving transformation

