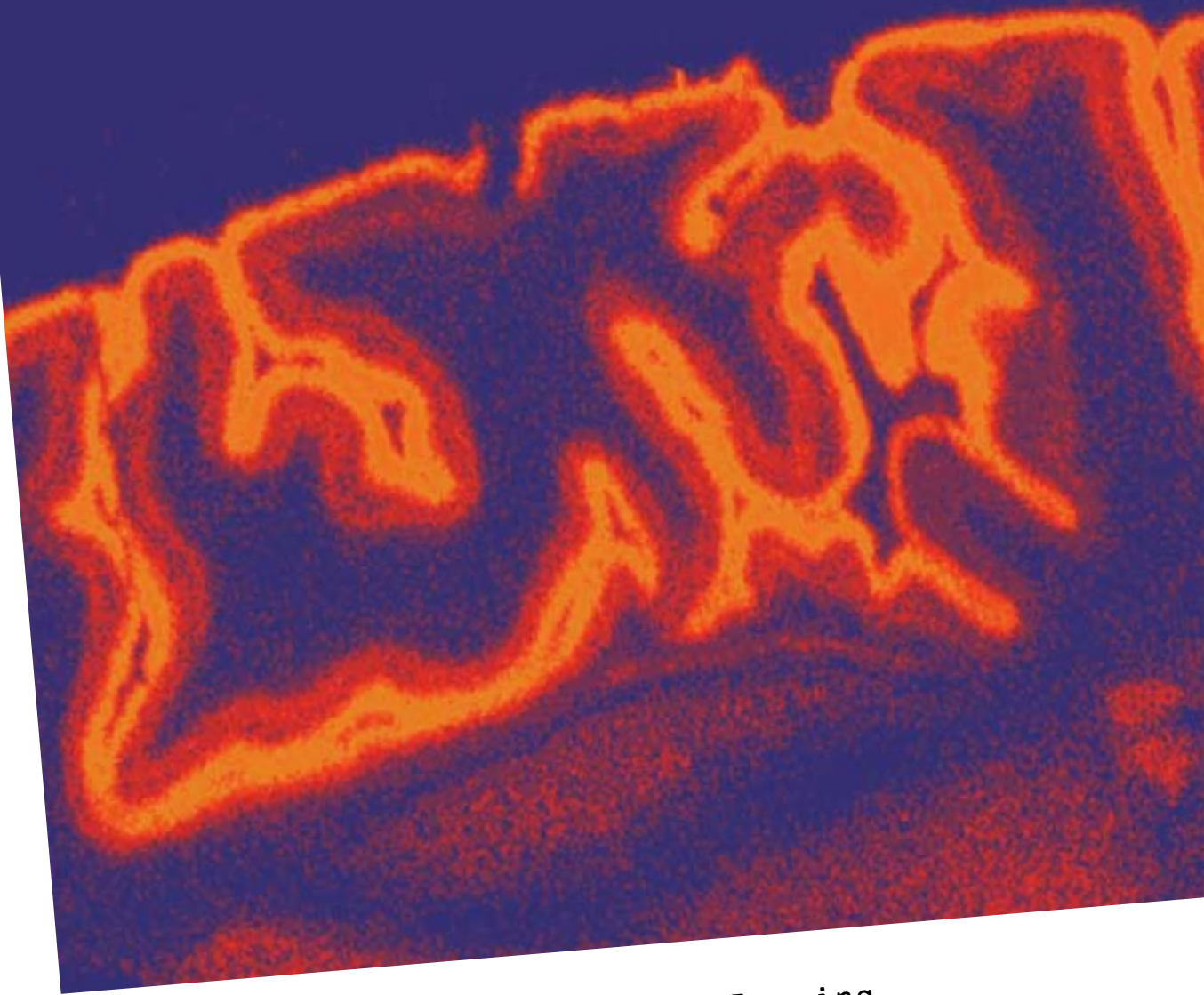


Real-time solutions for molecular imaging

# Beta Imager

ultrafast, real-time  
quantitative autoradiography



Pharmacology | Neurosciences | Molecular Imaging  
Genomics | Molecular Biology | Medicine  
Cosmetology | Environment | Biochemistry

 biospace lab

# Beta Imager



SENSITIVE

REAL-TIME

PRECISE

DIGITAL

**BETA IMAGER** TURNS  
AUTORADIOGRAPHY  
INTO A FAST AND  
EASY ROUTINE

MULTIPLE PROBE  
DISCRIMINATION

Tritium detection 500 times  
faster than film :

Tritium is a reliable beta emitter for measurement of biological samples. The problem is, detection is slow. Traditional film and phosphor imaging methods can take weeks to complete. But now, there is a better way to meet high throughput needs: **Beta Imager** cuts tritium imaging time from weeks to hours.

**A patented imaging system with  
unsurpassed sensitivity**

- detection threshold for tritium is 0.007 cpm/mm<sup>2</sup> : very low radioactive levels can be detected
- real-time imaging avoids under or over exposure and shows acquired image status at any time
- direct beta counting makes results absolutely reproducible, minimizing repeat experiments
- 60 µm spatial resolution is reachable with an optical zoom
- an exclusive patent allows simultaneous imaging and discrimination of multiple emitters
- precise quantitation can be performed even at very short time

**A versatile technology**

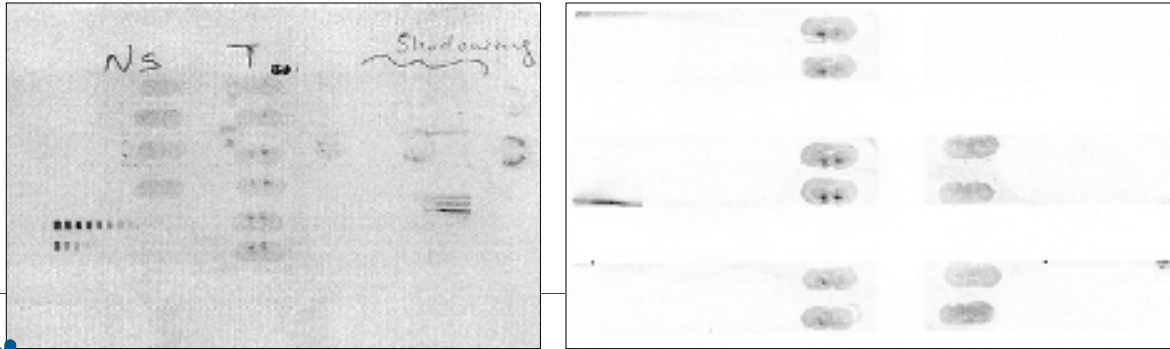
- ideal for tritium detection in samples up to 20 cm by 25 cm
- detects all other usual beta emitting isotopes (<sup>14</sup>C, <sup>32</sup>P, <sup>35</sup>S, <sup>33</sup>P, <sup>125</sup>I)
- detects electrons associated with gamma isotopes with high resolution and speed (<sup>123</sup>I, <sup>131</sup>I, <sup>99m</sup>Tc, <sup>201</sup>Tl, <sup>111</sup>In, ...)
- detects positrons associated with PET isotopes

**A wide range of applications**

- receptors binding
- whole body section
- tissue sections on glass slides
- any tissue sections
- TLC plates
- electrophoresis gels or membranes
- hybridization membranes
- ex vivo imaging after in vivo sessions (µSPECT, µPET)



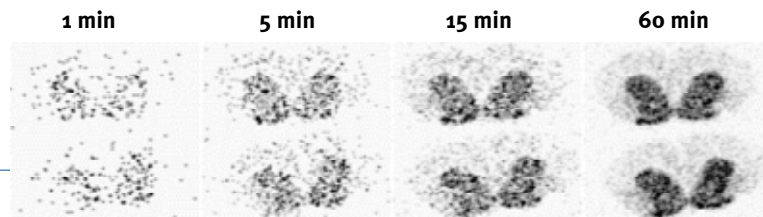
The very high sensitivity of the **Beta Imager** cuts tritium imaging from weeks to hours



4 week imaging plate acquisition (left) of rat brain sections using a  $^3\text{H}$  labeled probe compared to a 5 hour **Beta Imager** acquisition (right).

*Courtesy of Aventis Bridgewater, NJ, USA*

Real-time imaging provides continuously acquired image status during the experiment



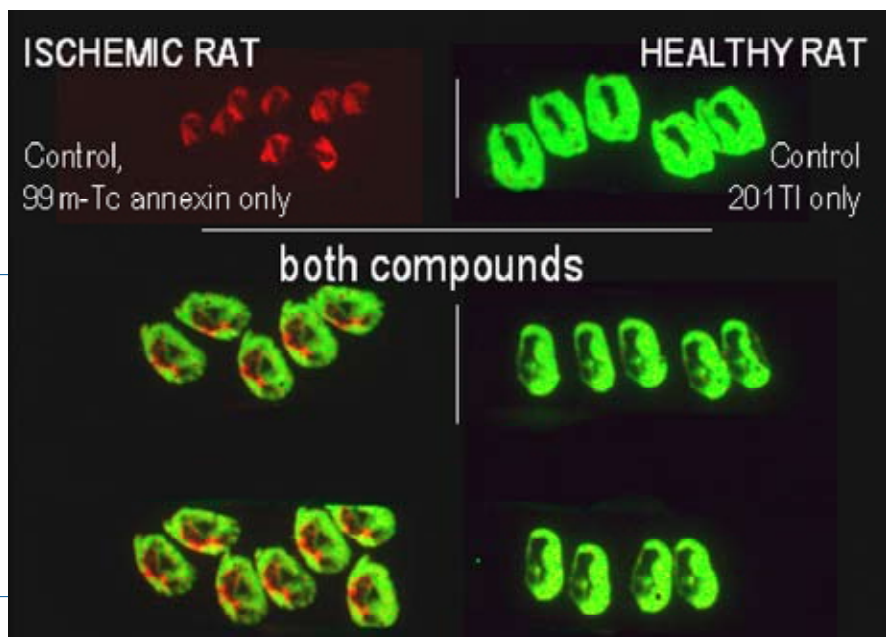
Distribution of D1 receptors ( $^3\text{H}$ SCH23390) in the rat striatum.

*Courtesy of Janssen Research Foundation*

Probe multiplexing for more in depth investigation

A study of the apoptotic to healthy cells ratio in the rat heart.  $^{201}\text{Tl}$  is fixed by healthy cells,  $^{99\text{m}}\text{Tc}$  Annexin is fixed by necrotic cells.

*Courtesy of N. Barthe, INSERM, Bordeaux, France*

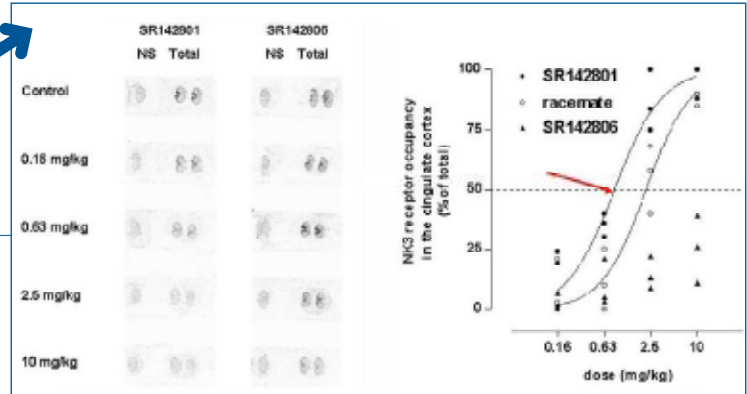


# Beta Imager a wide range of applications:

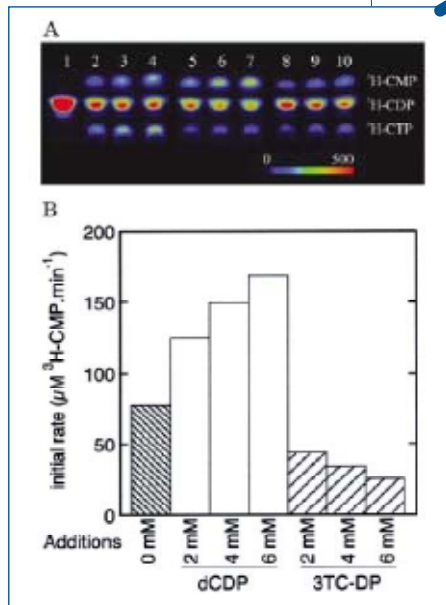
## Receptor binding

A study of the NK3 receptor occupancy by a triated compound and its inactive enantiomer. Curves show the response of dose-dependent occupancy for those products and their racemic mixture.

*Courtesy of X. Langlois (Langlois and al, JPET 299; 712-717, 2001)*



## TLC plate



TLC plate application: Kinetic of backward reaction of His-tagged human UMP-CMP kinase

(A) Time course of products formation after separation on a silica plate. The substrates are  $^3\text{H}$ CDP plus CDP (lanes 2-4), or plus dCDP (lanes 5-7) or plus L-3TCDP (lanes 8-10)

(B) Initial rates of  $^3\text{H}$ CMP formation upon addition of dCDP or L-3TCDP.

*Courtesy of C. Pasti (Pasti and al, EJB 270; 1784-1790, 2003)*

## Whole body mapping

Representative mapping of target organs for  $^3\text{H}$ -labeled HB-19. Rats were injected with 1.8 MBq (50  $\mu\text{Ci}$ ; 8 nmol or 20  $\mu\text{g}$ ) of the  $^3\text{H}$ -labeled HB-19 at 5 min (A), 1 h (B), and 24 h (C). Midsagittal sections (A-C) and lateral sagittal section at 1 h postinjection (D) of rat whole body are shown. The spleen (E) and a section of the bone (F) regions were magnified by  $\mu$ -imager. The highest concentration of radioactivity is seen in the renal inner medulla, liver, and spleen, as well as visible bone tissues (vertebra and limb). The colored scale from dark (no signal) to red (intense radioactive signal) is shown in D.

*Courtesy of B. Krust (B.Krust and al., PNAS 98; 14090-14095, 2001)*

