

# Medical Therapies Limited

## EGM Presentation

Maria Halasz  
Chief Executive Officer  
5 May 2009

# Agenda

1. Company information
2. Recent developments
3. Business strategy
4. Key value inflection points for next 18 months
5. Technology information
6. Summary

# Medical Therapies (ASX:MTY)

- ⦿ Listed in December 2005
- ⦿ 185M shares on issue
- ⦿ Midkine specialist and owner of the largest diagnostic and therapeutic patent portfolio around this novel cancer target globally
  - Developing early cancer diagnostic test
  - Developing therapeutic antibody portfolio with partners

# Recent developments

## Capital structure and funding

- Retired \$1.1M convertible debt in February 2009
- Raised \$790K for partial debt repayment and working capital in two private placements in February and April 2009
- Retired \$1.5M debt in lieu of ordinary shares

## Product development

- Commenced mycoplasma testing and antibody production for Midkine ELISA
- Selected cell banking and production facility for therapeutic monoclonal antibodies for pre-clinical validation trials

# Recent developments

## Business development

- ⦿ Completed licensing and partnering data packages in the following areas
  - Therapeutic anti-midkine antibody (Multiple sclerosis and rheumatoid arthritis)
  - Veterinary cancer diagnostics (Early cancer diagnosis in canines)
  - Human early cancer diagnostics (Midkine as a novel cancer marker)
- ⦿ Advanced licensing and partnering discussions in the following areas
  - Veterinary cancer diagnostics
  - Anti-midkine antibody therapeutics for MS and RA
  - Midkine ELISA distribution
  - Midkine protein therapy clinical collaboration for post AMI treatment



# Business strategy – diagnostic portfolio

## Commercialise MK cancer diagnostic assets

- Complete optimisation of commercial Midkine ELISA
- Set up distribution of Midkine ELISA for research
- Complete clinical validation of early cancer diagnostic
- Complete validation of canine cancer diagnostic test
- Develop in vivo imaging assay for MK with partner
- Develop rapid MK diagnostic assay with partner
- License canine cancer diagnostic test

# Business strategy – therapeutic portfolio

## Partner or license therapeutic assets

- Set up partnership for the humanisation, optimisation and preclinical POC of the anti-midkine antibody assets
- License antibody assets for selected indications (RA, MS, restenosis)
- Complete validation trials and license anti-inflammatory antibody for veterinary applications
- Complete pre-IND package for AMI in preparation for out-licensing of MK-protein therapeutics

# Key value inflection points

May 2009

December 2010

Partnership to humanize and optimize lead mAb candidates  
Sept 2009

Complete commercial ELISA  
Oct 2009

Partnership for in vivo MK imaging program  
Nov 2009

Point of care MK assay collaboration  
Nov 2009

Commence ELISA sales for veterinary applications  
Nov 2009

Commence ELISA sales for research  
Dec 2009

Antisense and siRNA partnership  
March 2010

License early cancer diagnostic in dogs  
Jul 2010

License dog metastatic cancer treatment  
Sept 2010

First Ab indication license pre-clinical  
Dec 2010

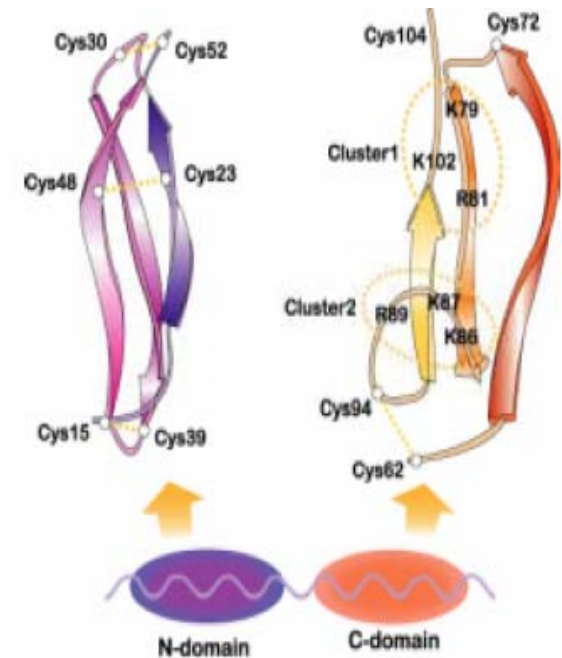
Diagnostic milestone  
Therapeutic milestone  
Revenue trigger

The Board and management consider the above a realistic timeline for achieving these milestones, it is subject to a number of external factors including availability of funding, external service providers and timely response from regulatory authorities.



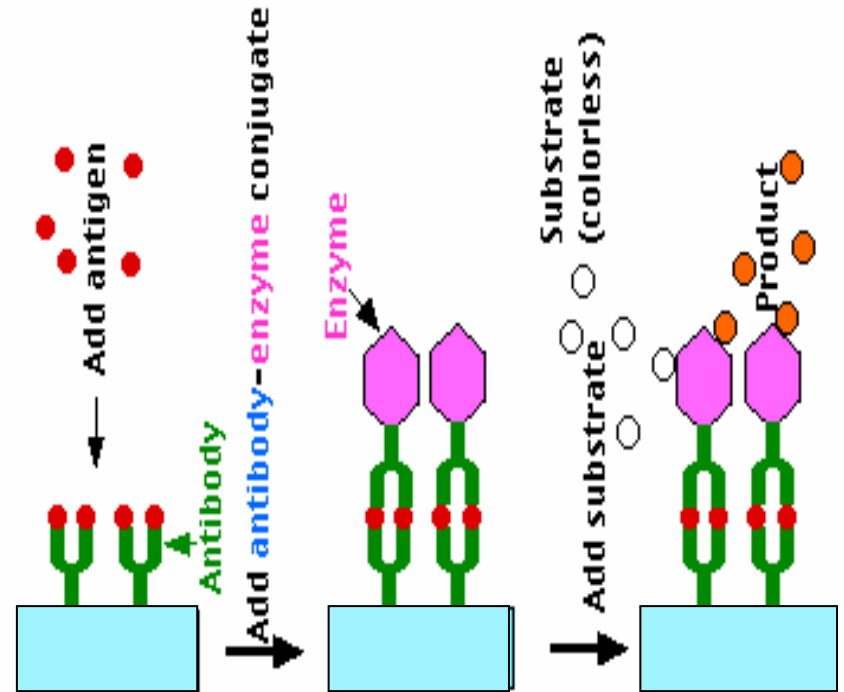
# Midkine, a novel target

- Novel target for new therapies and diagnostics against cancer, inflammation and autoimmune diseases
- Small protein (13kD, 121 AA's) with two domains
- Heparin binding growth factor prominent in embryogenesis but largely undetectable in adults
- Acts by:
  - reducing apoptosis (cell death)
  - facilitating cell migration
  - modulating angiogenesis
  - promoting cell growth
- Has important role in cancer progression, onset of inflammatory diseases and preservation and repair of injured tissue
- Strong preservation across species (and substantial animal data) provides for veterinary applications



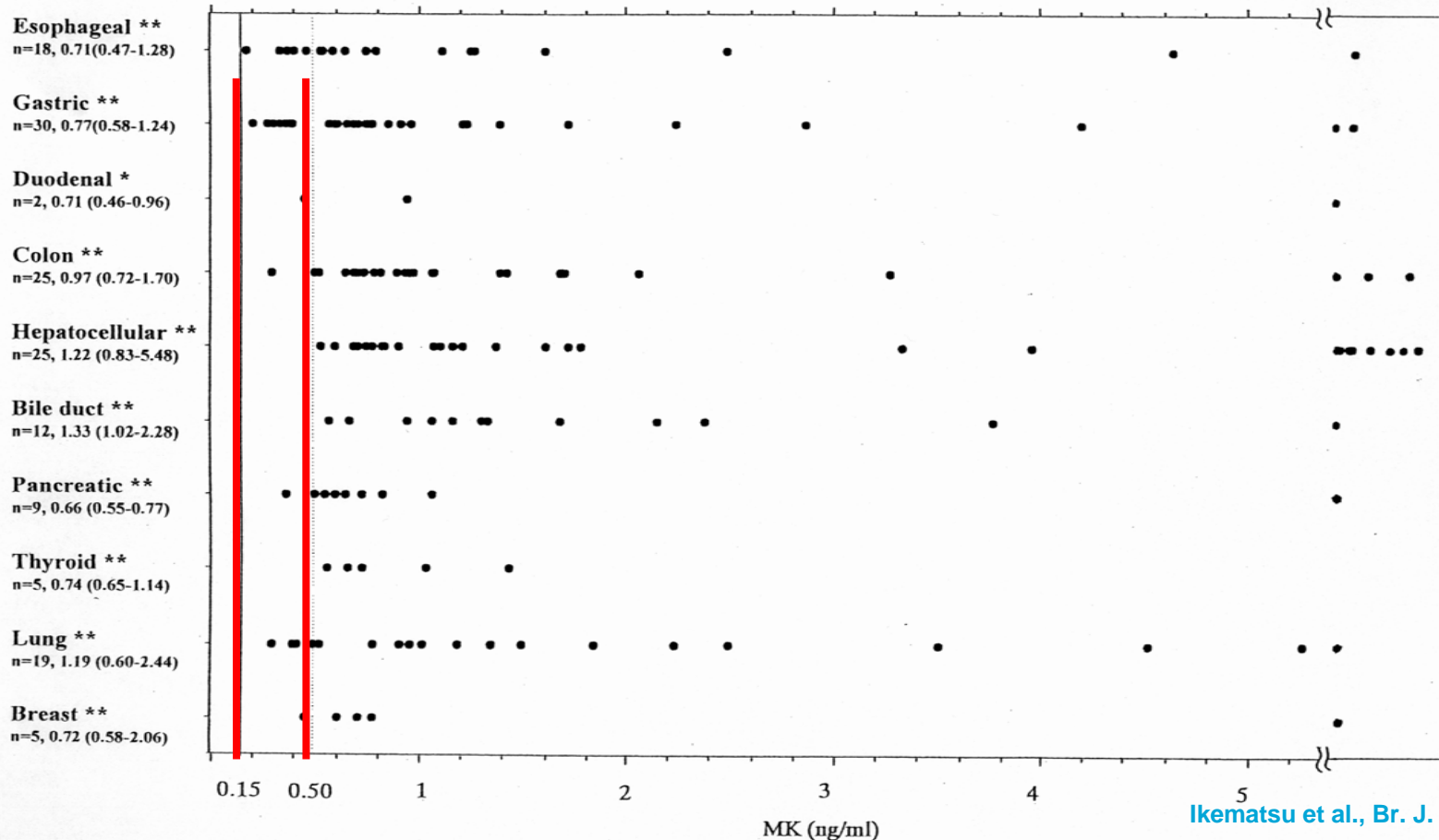
# Midkine, a novel cancer marker

Detection of Midkine in serum by using our proprietary Enzyme-linked Immunoassay (ELISA)



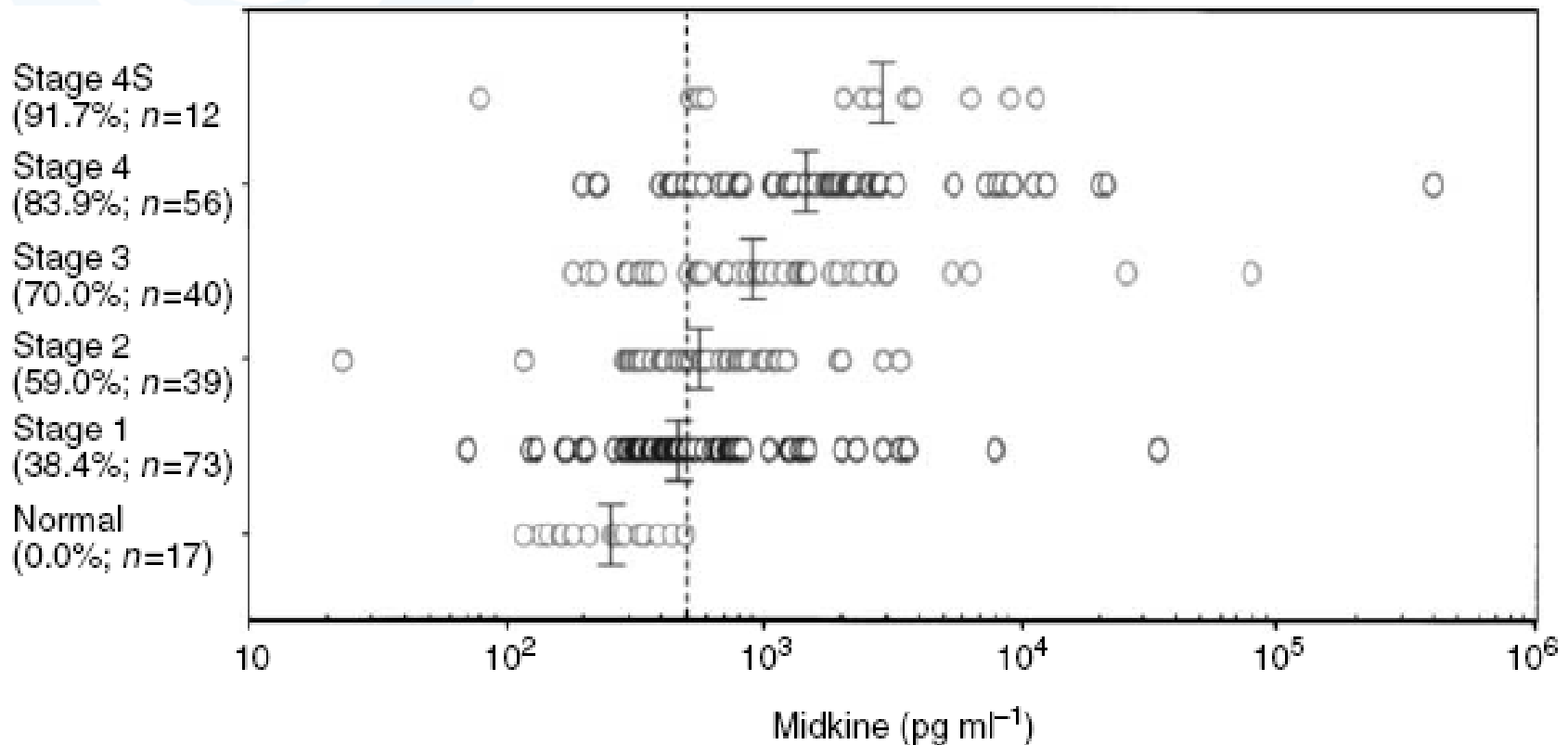
# Midkine levels in cancer patients

Midkine levels were found to be elevated in 87% of cancer patients in 10 different cancers



# Midkine in cancer prognosis

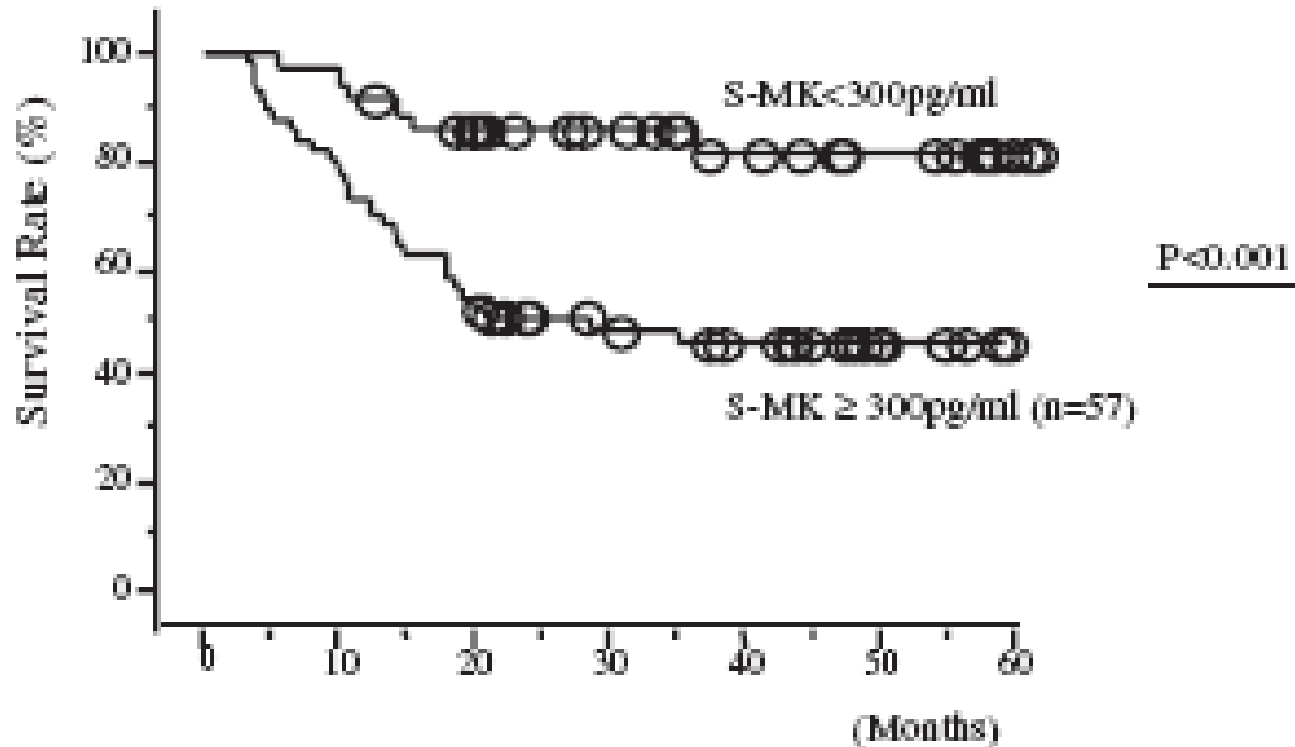
Strong correlation of elevated level of blood midkine with poor prognosis of neuroblastoma



Ikematsu, et al, British Journal of Cancer 2003

# Midkine in cancer prognosis

Five year survival curves of 93 patients with oesophageal squamous cell carcinoma show statistically significant survival rate increase amongst patients with 300pg/ml or less Midkine in the blood

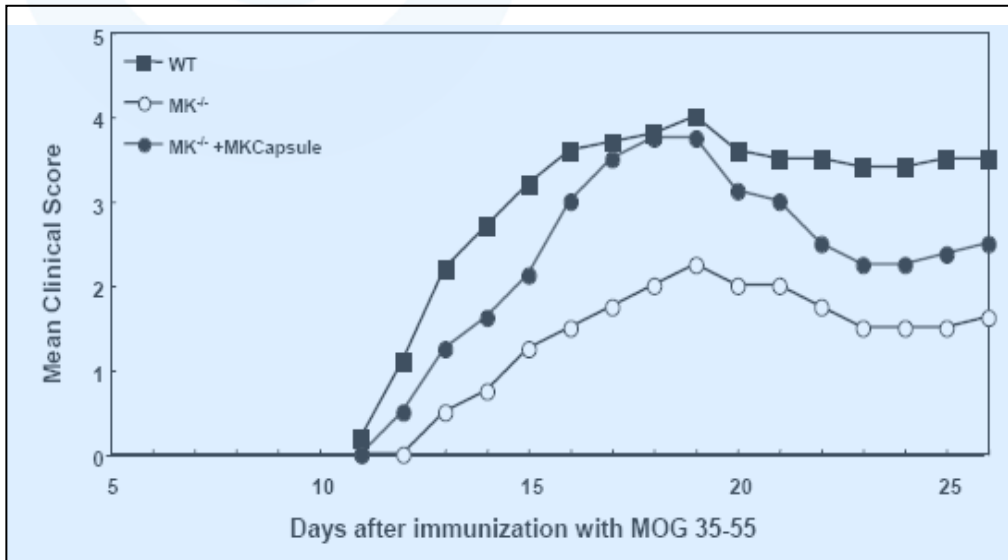


Hideaki, et al. Cancer Science 2003



# Midkine antibodies for the treatment of multiple sclerosis

The role of MK in the development and severity of multiple sclerosis



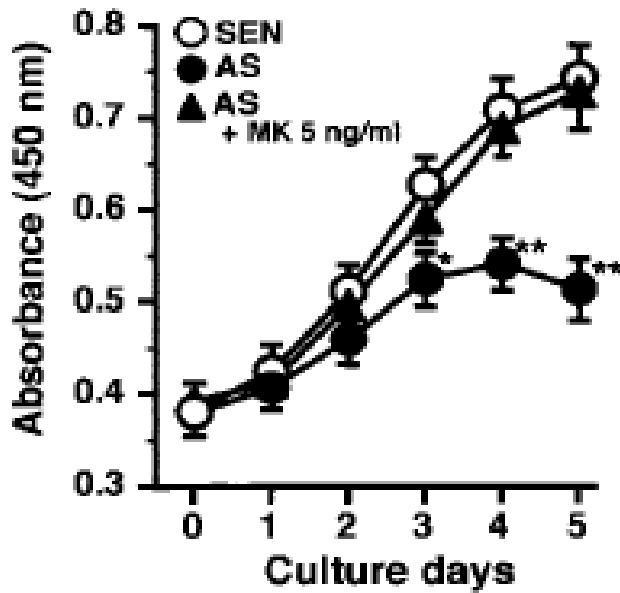
**MK<sup>-/-</sup> mice show delay in disease onset and reduction in disease severity after immunisation with MOG35-55**

- Standard MS animal model (EAE) was used by inducing MS with the administration of MOG35-55
- Significant delay of disease onset was observed in mice without the MK gene (MK<sup>-/-</sup>)
- Significantly less severe MS like symptoms were observed in MK<sup>-/-</sup> mice
- Further pre-clinical work on the same animal model confirmed therapeutic effect of two of MTY's antibodies

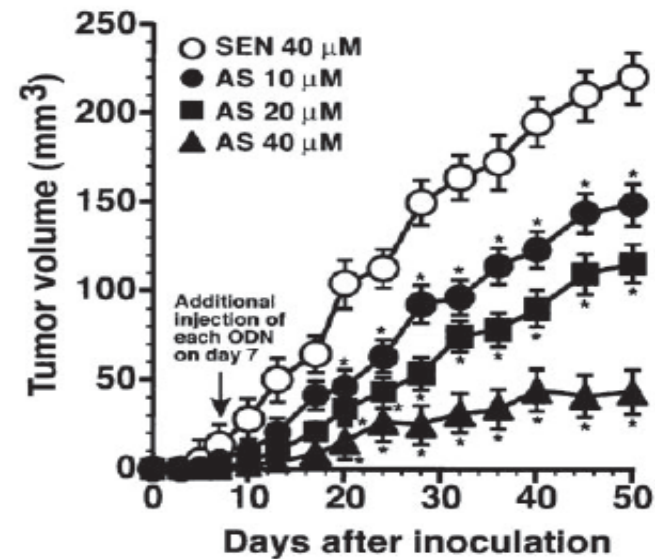
Wang et al, Proc Natl Acad Sci U S A, 2008

# Antisense Midkine in the treatment of rectal carcinoma

Anti-midkine antisense reduced growth of rectal carcinoma cells



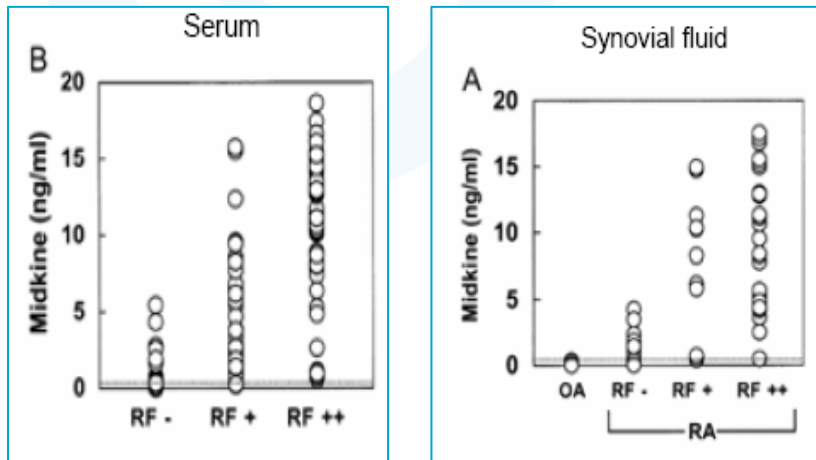
Anti-midkine antisense dose curve against rectal carcinoma in mice



Takei, et al. Cancer Research 2001

# The role of Midkine in rheumatoid arthritis

Midkine levels observed in patients with rheumatoid arthritis



**Increased levels of Midkine detected in more severe cases of RA patients**

RA induced in wild type and MK-/- mice

	Arthritis		Incidence
	+	-	
<b>WT Mice</b>	<b>6</b>	<b>1</b>	<b>86%</b>
<b>MK-/-</b>	<b>1</b>	<b>9</b>	<b>10%</b>
<b>MK pump</b>	<b>9</b>	<b>3</b>	<b>75%</b>

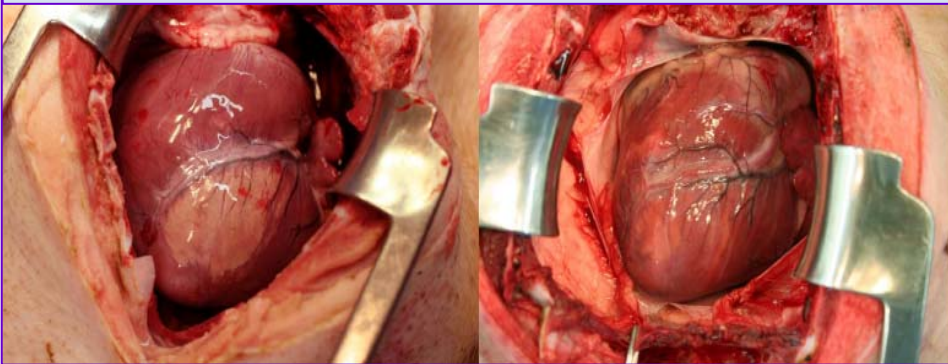
- 6/7 (86%) WT mice show symptoms using antibody induced arthritis model
- 1/10 of MK-/- (10%) mice show symptoms using antibody induced arthritis model
- When Midkine is injected into MK-/- mice 75% show symptoms of arthritis

Maruyama et al, Arthritis Rheum, 2004

# Midkine protein as therapeutic

Midkine therapy following Acute Myocardial Infarction (AMI)

## Pig model



**Control**

**Midkine treated**

Mortality rate after 24 hours:

- Control: **4/12 (33.3%)**
- MK-treated: **1/9 (11.1%)**

- ⦿ Pig model of AMI - balloon was placed distal to the first diagonal artery for 45 minutes
- ⦿ Following ischemia and reperfusion 5 microgram per kilogram MK was injected directly into the ischemic area over 10 minutes
- ⦿ Single dose MK reduced mortality to one third

# Summary

- ⦿ Advanced diagnostic portfolio with near term revenue potential
- ⦿ Veterinary diagnostic and therapeutic portfolio with lower regulatory hurdles and close to revenue
- ⦿ Early licensing revenue opportunities for high value therapeutic anti-midkine antibody and anti-midkine oligonucleotide assets
- ⦿ Early licensing revenue opportunities from MK protein to facilitate recovery after heart attack
- ⦿ Actively targeting sustainable and significant returns for shareholders by selective partnering around MTY's blocking MK intellectual property portfolio
- ⦿ Board and management is focused on increasing shareholder value through a transparent, milestone based growth strategy



# Thank you

**Maria Halasz**

Chief Executive Officer

E: [halasz@medicaltherapies.com.au](mailto:halasz@medicaltherapies.com.au)

T: +61 2 9299 0311

[www.medicaltherapies.com.au](http://www.medicaltherapies.com.au)

# Forward looking statements

This presentation contains forward-looking statements. These statements are not guarantees of Medical Therapies Limited's future performance and involve a number of risks and uncertainties that may cause actual results to differ materially from the results discussed in these statements. Factors that might cause the Company's results to differ materially from those expressed or implied by such forward-looking statements include, but are not limited to, development and commercialisation of the Company's product portfolio, development or acquisition of additional products, availability of development capital and other risks and uncertainties.