



Problems in Chemotherapy of Taeniasis Cases Where Both *Taenia saginata* or *Taenia asiatica* and *Taenia solium* are Sympatrically Distributed

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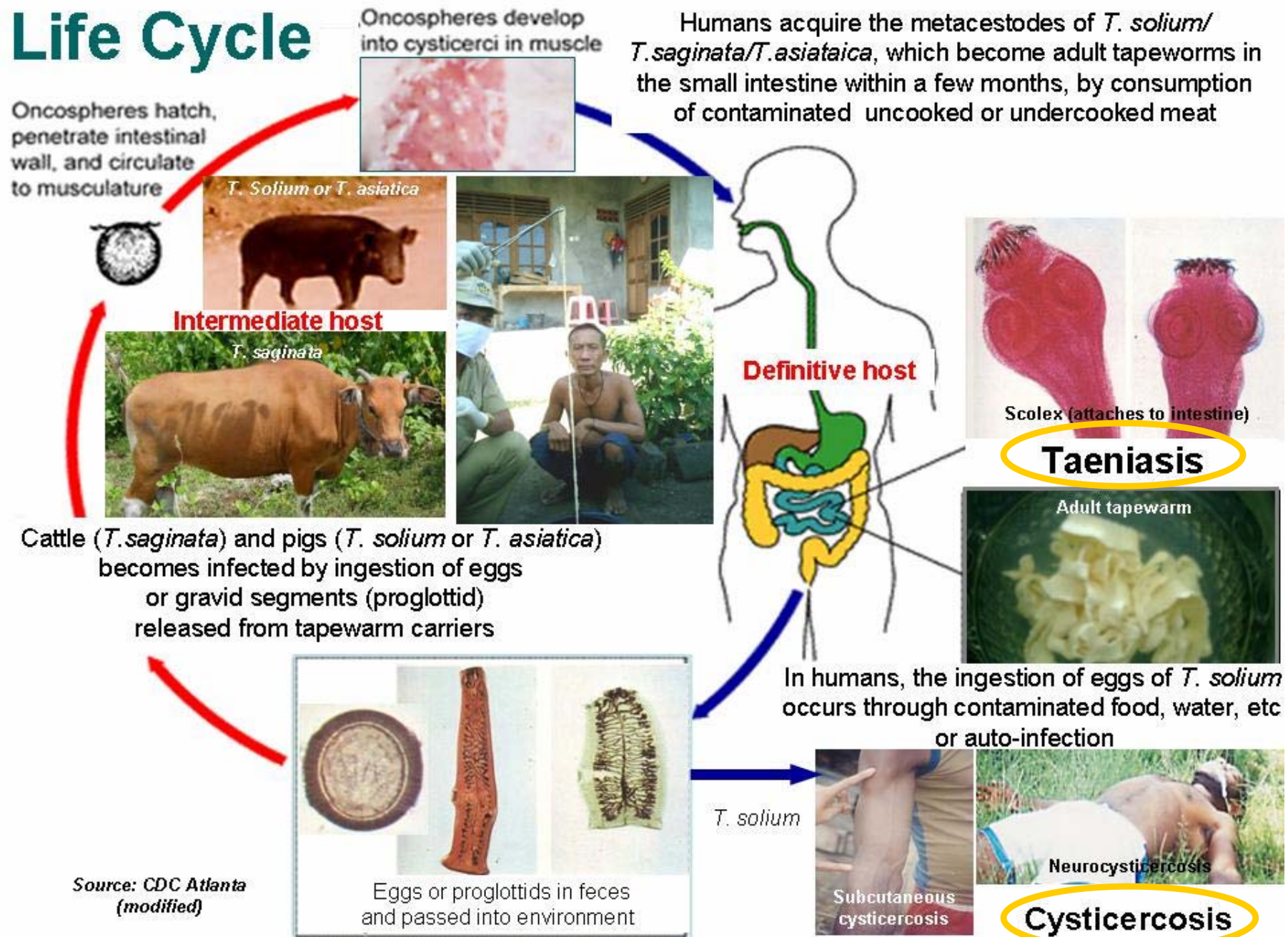
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Outline

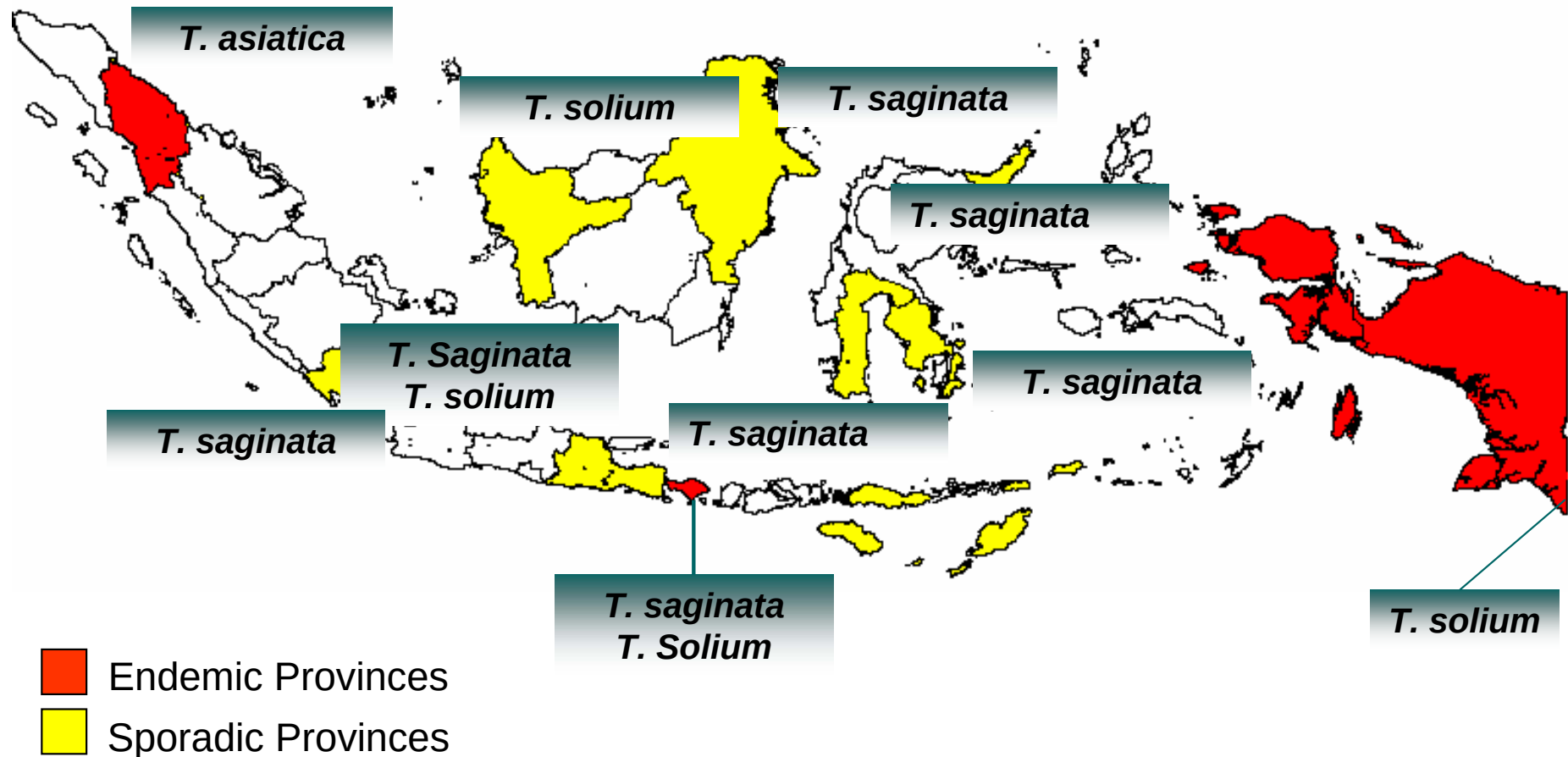
1. **Introduction**
2. **Taeniasis/Cysticercosis
in Bali**
3. **Taeniasis/Cysticercosis
in Papua**
4. **Taeniasis/Cysticercosis
in North Sumatra**
5. **Treatment of Taeniasis Cases**

Introduction

Life Cycle



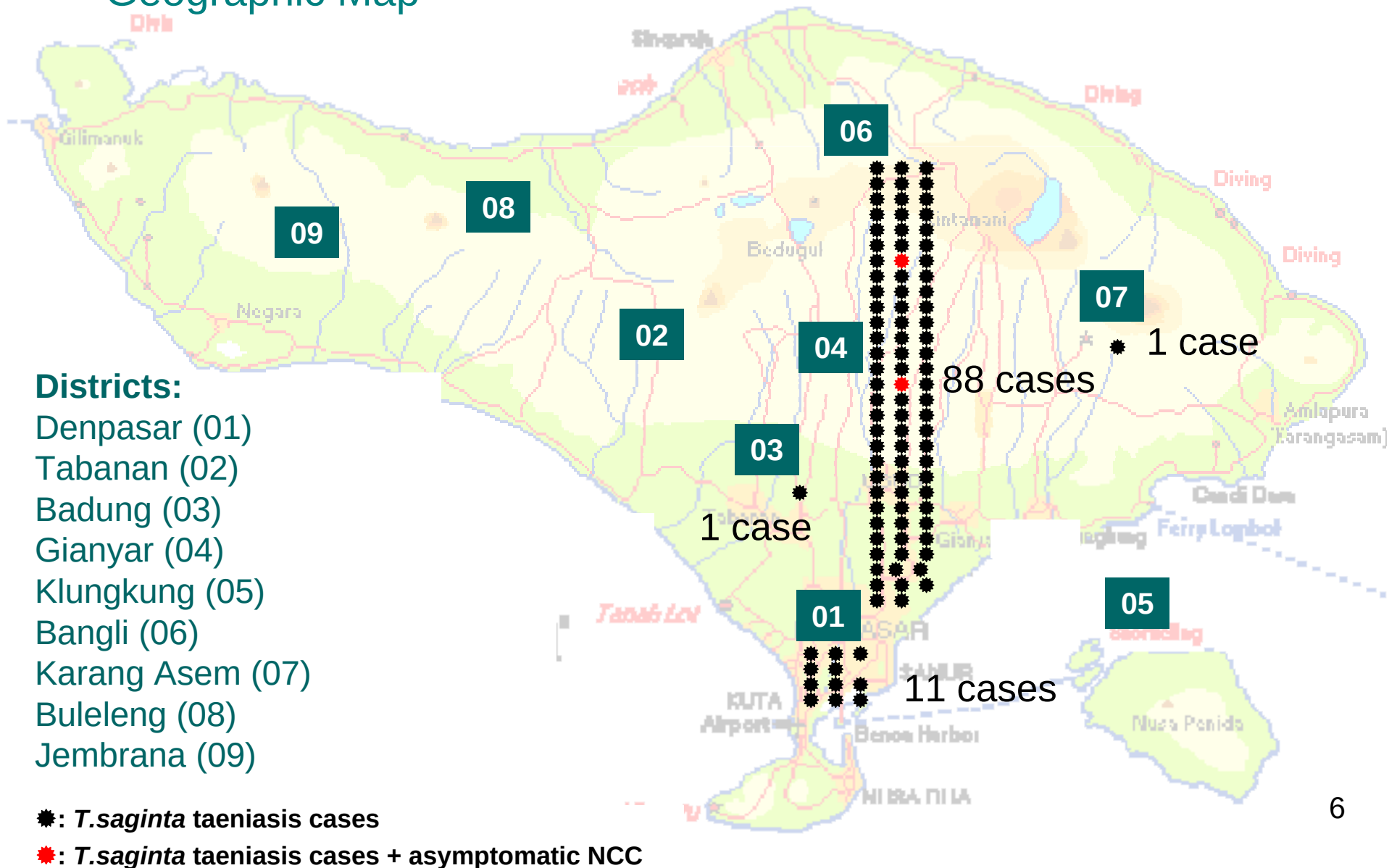
Map. Endemic and sporadic provinces of taeniasis/cysticercosis in Indonesia



Taeniasis/Cysticercosis in Bali

Distribution of *T. saginata* taeniasis in Bali, 2002-2010

Geographic Map



**Tab. Seroprevalence of Cysticercosis
in 9 Districts of Bali, 2002-2010**

Year	District	Seroprevalence (%)	Reference
2002	Gianyar	0.8 (1/125)	Wandra <i>et al.</i> (2007)
2004	Gianyar	0.0 (0/46)	
	Badung	0.0 (0/91)	
	Denpasar	0.0 (0/49)	
2005	Gianyar	0.0 (0/13)	Wandra <i>et al.</i> , unpublised
	Denpasar	0.0 (0/16)	
2006	Gianyar	0.0 (0/39)	
	Karang Asem	2.8 (1/36)	
2007	Bangli	0.0 (0/32)	Wandra <i>et al.</i> , unpublised
	Gianyar	4.2 (1/24)	
2008	Jembrana	0.0 (0/84)	
	Tabanan	0.0 (0/42)	
2009	Klungkung	0.0 (0/100)	
	Buleleng	0.0 (0/47)	
2010	Gianyar	0.0 (0/24)	
	Denpasar	0.0 (0/54)	

Summarized data of NCC in Bali, 2003-2010

Area/hospital	Diagnosed	No. of case
¹¹ Sanglah Hosp, Dps (2003)	Disseminated cysticercosis	1
¹² Sanglah Hosp, Dps (2004)	NCC	2 + 1 with 2 nodules
¹³ Sanglah Hosp, Dps (2005)	NCC	1 with 2 nodules
¹⁴ Gianyar (2007)	NCC (dual infection)	1 with <i>T.saginata</i> taeniasis
¹⁵ Sanglah Hosp, Dps (2009)	NCC	5
¹⁵ Sanglah Hosp, Dps (2010)	NCC	3

^{11,12,13, 15}Sudewi *et al.*, unpublished, ¹⁴Wandra *et al.*, unpublished.

Source of infection

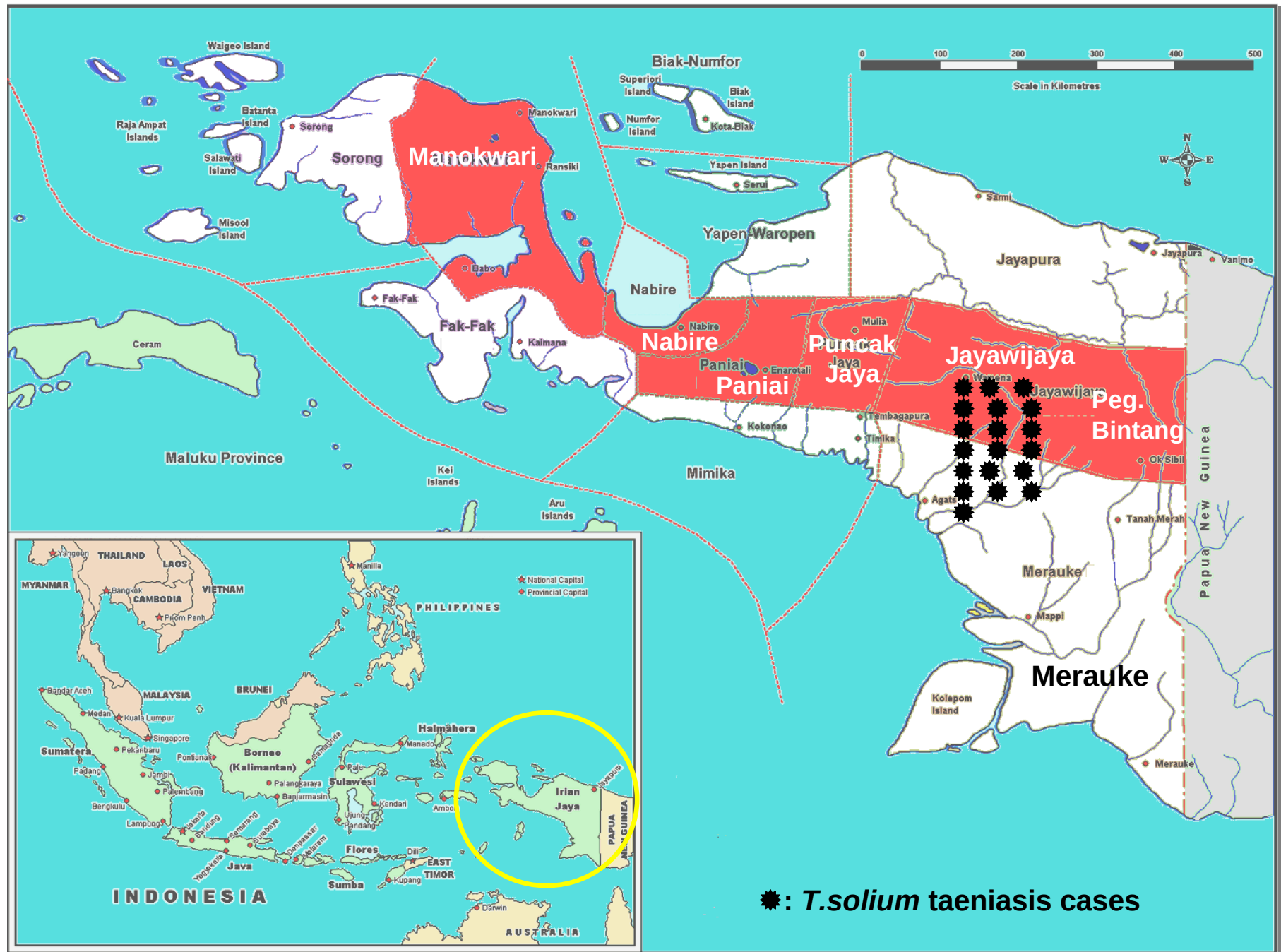


Beef lawar



Pork lawar

Map. Distribution of Taeniasis/Cysticercosis by District in Papua

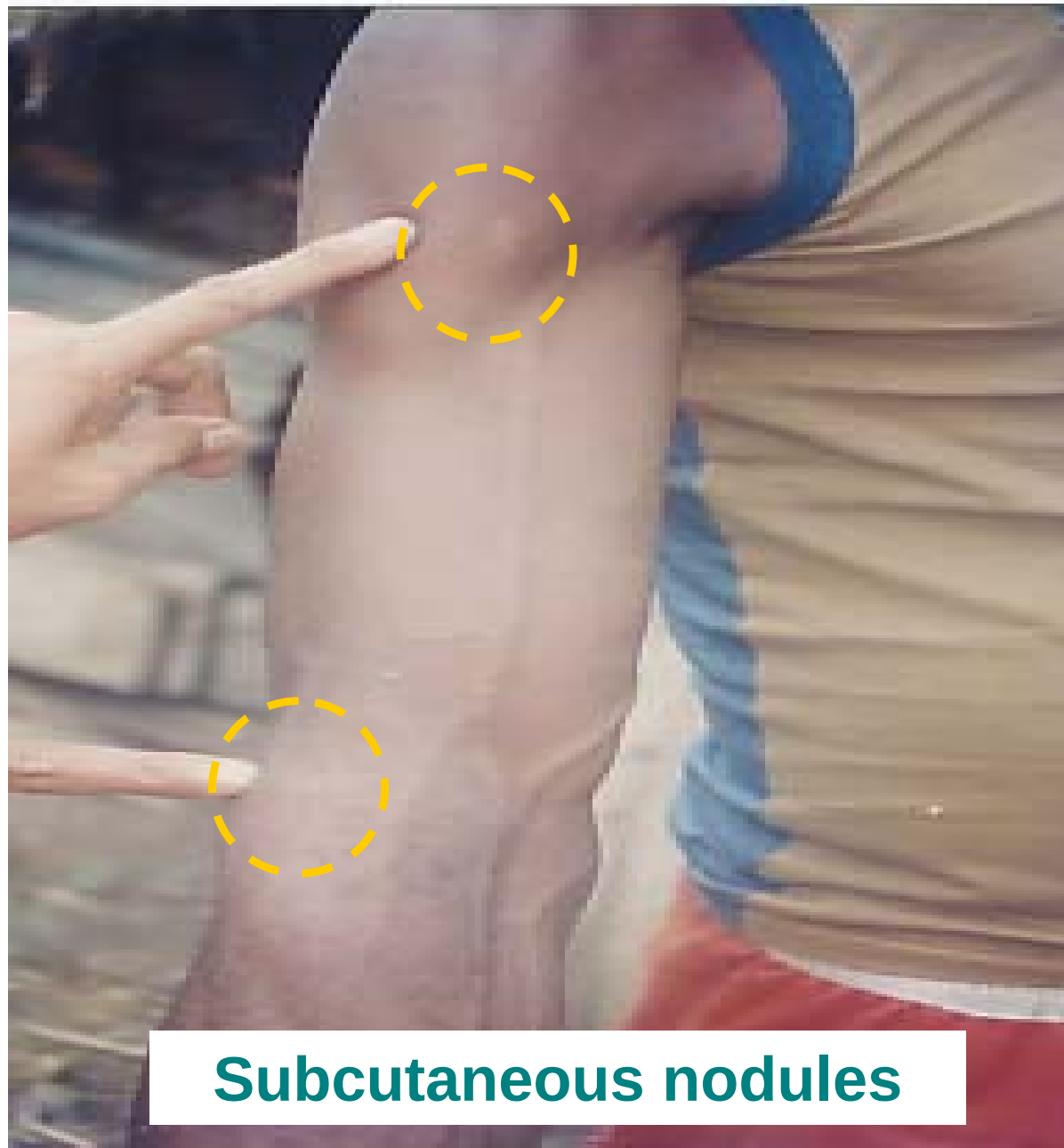


■ Endemic districts

Seroprevalence of cysticercosis by district and sub-district in Papua, 1996-2010

District	Sub-District	Year	Population sampled	Seroprevalence (%)
Jayawijaya	Assologaima	1996	96	45.8
	Wamena	1998-2002	632	15.7
	Kurulu	1998	131	39.7
	Hubikosi	1998-2001	43	18.6
		2007	1251	20.8 [#]
Merauke	Merauke	1997	30	3.3*
	Merauke	1998	60	0.0
Manokwari	Minyambow	2003	97	4.1
	Anggi	2003-2004	177	2.3
Paniai		2004	61	1.6
		2007	631	29.2 [#]
Nabire	Nabire	2004	37	0.0
	Idakebo	2004	14	33.3
	Monamani	2004-2005	54	9.3
Puncak Jaya		2007	647	2 [#]
Peg. Bintang		2007	385	2 [#]
Jayawijaya		2010	288	? (Febuary 2011)

*Imported case, [#]Salim, et al., 2009



Subcutaneous nodules



Epileptic seizures



Burns



Source of Infection



**Among 506
Families,
1996-2005
period:**

Defecated
in Toilet (17%),
in the Backyard
(6.3%),
in River (1.8%),
in the Garden
(64.6%),
in the Forest
(10.3%)

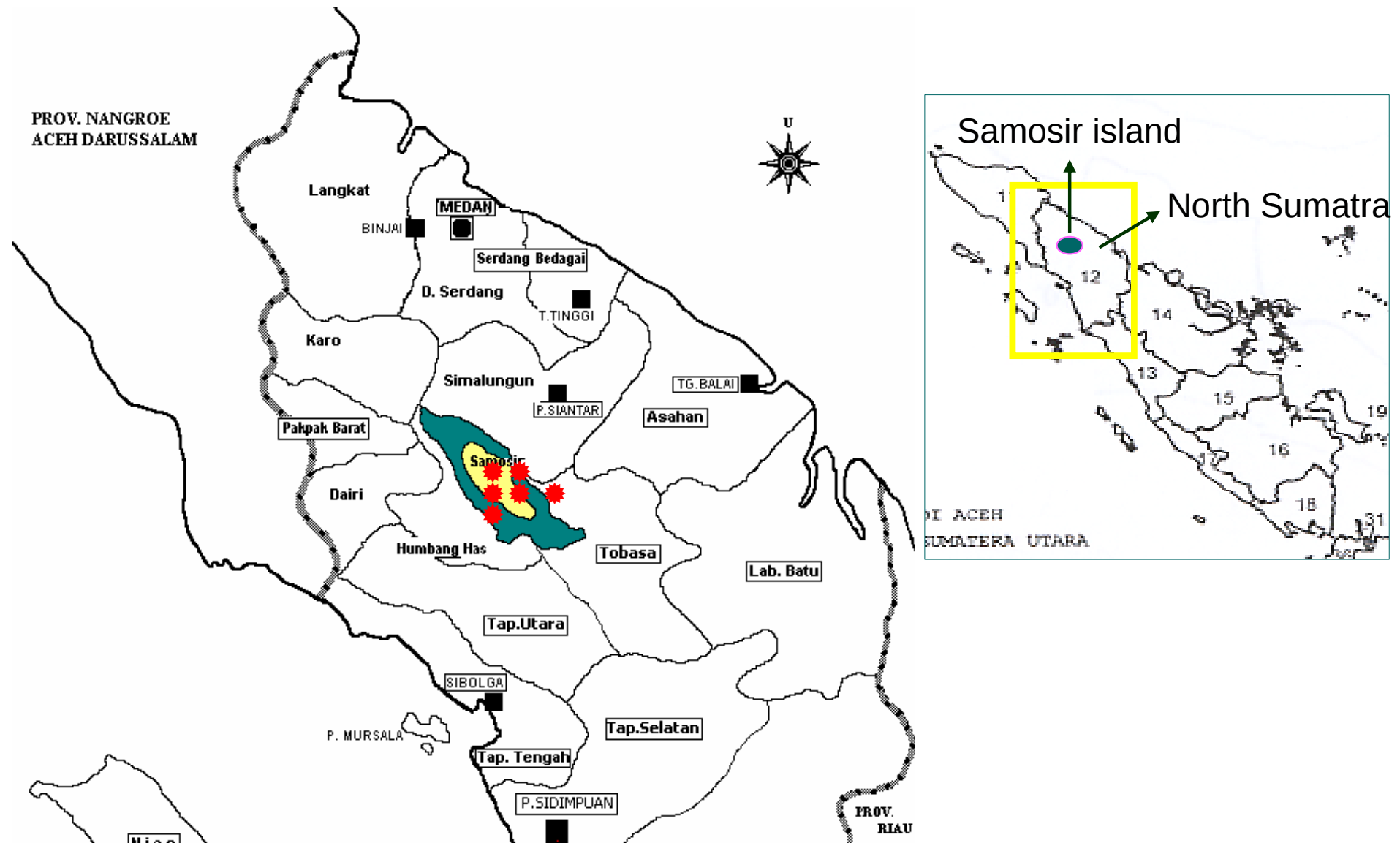
Tradisional Methods: Pork - Roasted on Hot Stones (*Batu Panas*) ~ Undercooked Pork



Taeniasis/Cysticercosis in North Sumatra

Map. Endemic Area of *T. asiatica*

Taeniasis in North Sumatra



Summarized Data of Seroprevalence of Cysticercosis in Samosir island, North Sumatra, 2003 & 2005

District/island	Seroprevalence (%)	Reference
Samosir	0.0 (0/58)	Wandra <i>et al.</i> , 2007
Samosir	0.0 (0/105)	



Treatment of Taeniasis Cases

No. of Taeniasis cases Treated by province 2002-2010

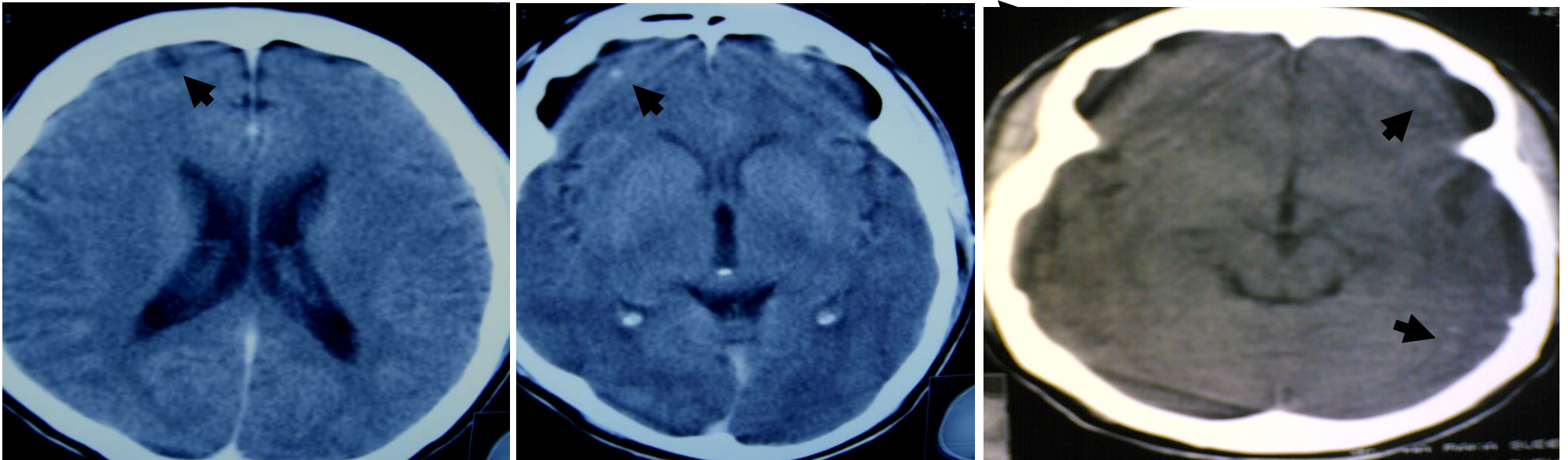
Pro- vinces	No. of sample	No. of tae- niasis case			No. of treated	No. of epileptic seizures attacked	Diagnosed post treatment
		<i>T.sagi- nata</i>	<i>T. soli- um</i>	<i>T. asia- tica</i>			
Bali	1150	101	-	-	91 (Prazi- quantel)	1	Dual infection (a)
					10 (Niclosa- mide)	0	Dual infection
Papua	146	-	19	-	19 (Prazi- quantel)	0	
North Suma- tra	240	-	-	6	19 (Prazi- quantel)	0	

(a) Dual Infection (*T. saginata* taeniasis and neurocysticercosis) in Bali (1)

- A 47-year-old, Balinese man
- Diagnosed: *T. saginata* carriers
- History of headache and epileptic seizures: (-),
- subcutaneous nodules (-)
- Treated with a single dose of praziquantel to expel adult worm(s).
- Within 6 hours of treatment, was attacked by epileptic seizure (for $\pm$ 5 minutes), and admitted to the Sanglah Hospital.
- Vital sign: normal
- There were no abnormalities in respiratory and cardiovascular systems.
- Laboratory data: normal.

(a) Dual Infection (*T. saginata* taeniasis and neurocysticercosis) in Bali (2)

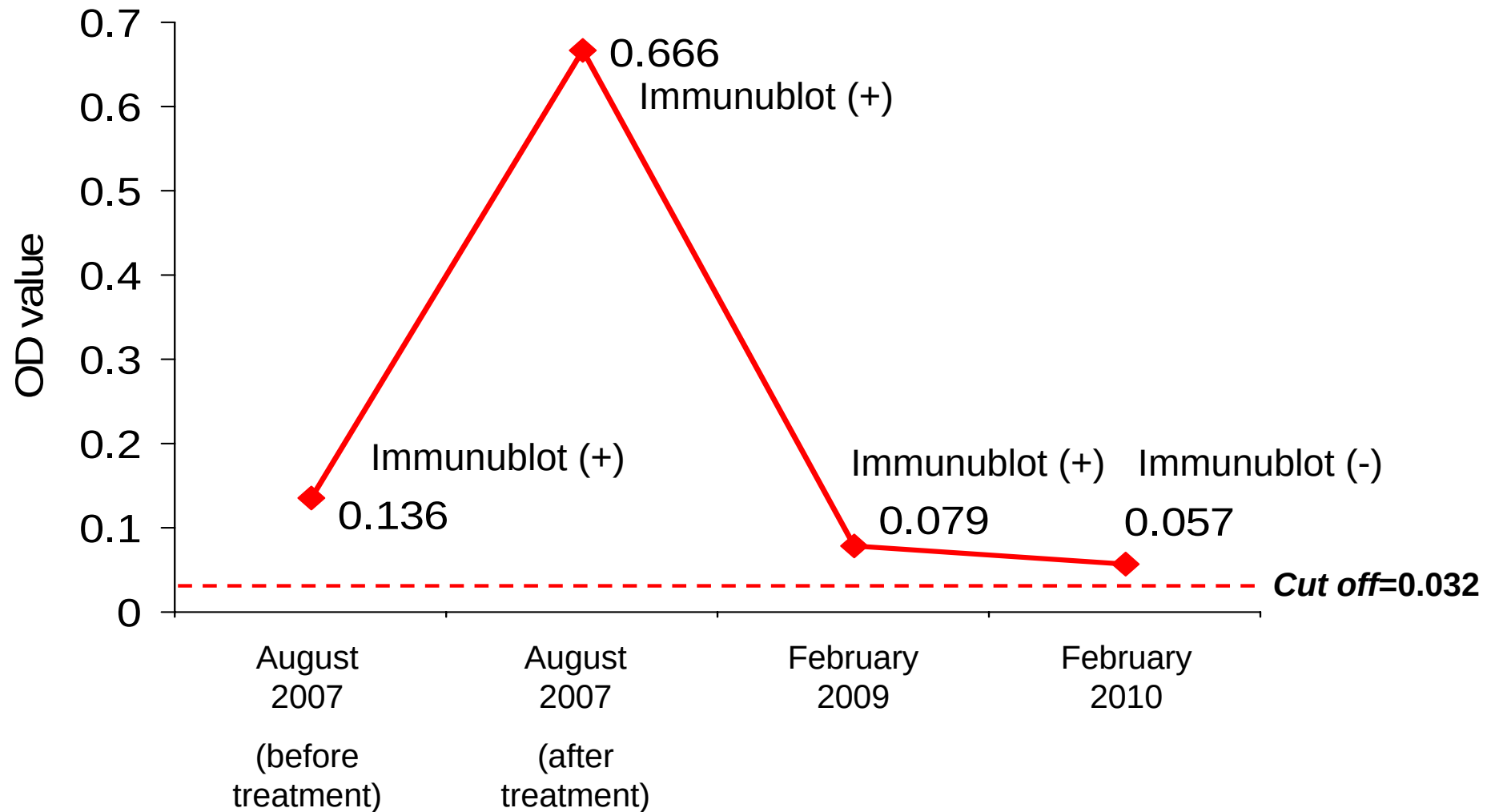
CT scan



Multiple cystic lesions

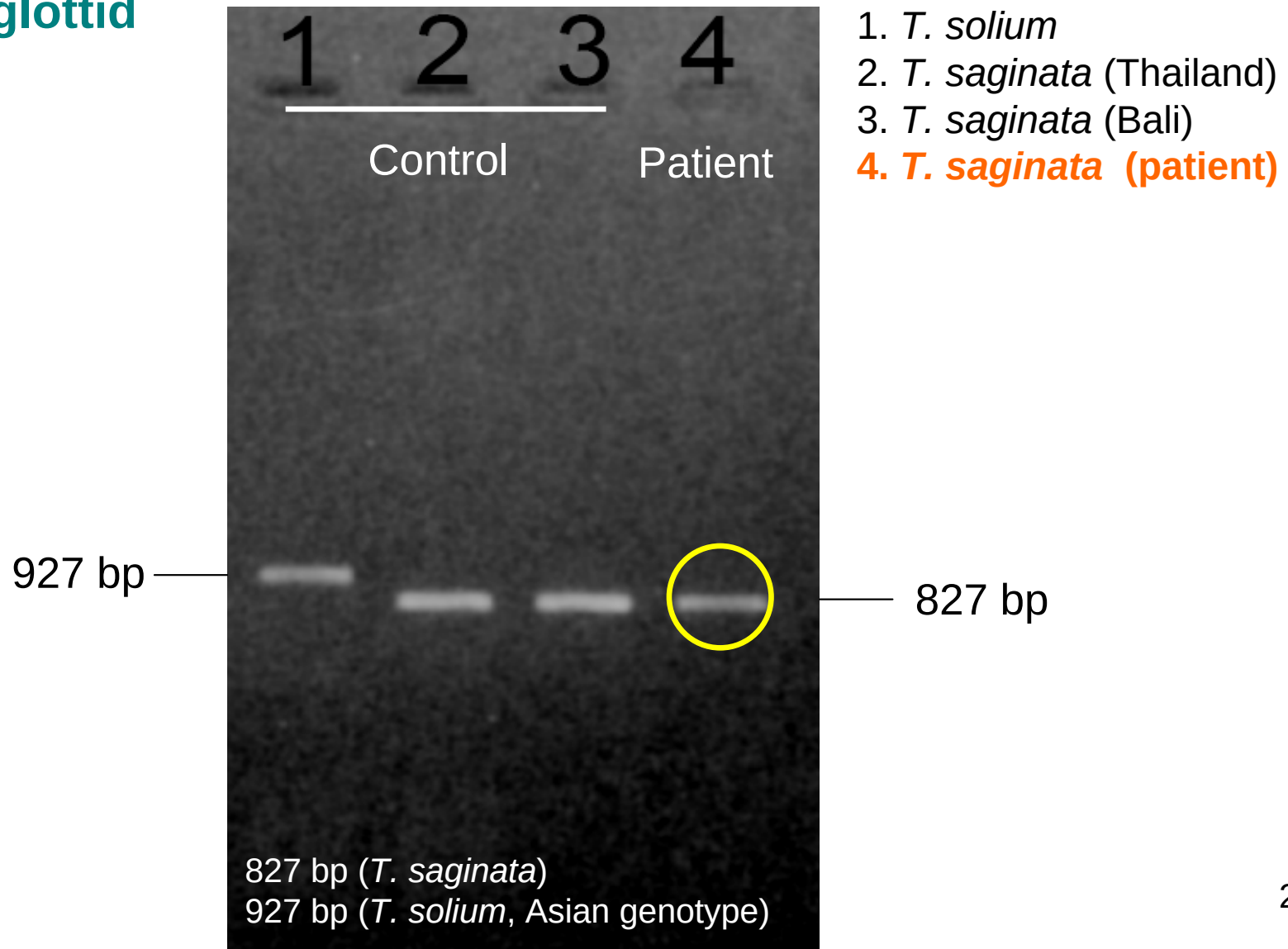
(a) Dual Infection (*T. saginata* taeniasis and neurocysticercosis) in Bali (3)

ELISA & Immunoblot



(a) Dual Infection (*T. saginata* taeniasis and neurocysticercosis) in Bali island, 2007 (4)

DNA analysis (mPCR)
of proglottid



Conclusion

1. *T. saginata* and *T. solium* are distributed in Bali, whereas *T. solium* in Papua, and *T. asiatica* in North Sumatra
2. Asymptomatic Neurocysticercosis can be induced by treatment with praziquantel.

Thank you