



Workshop

"RISULTATI DEL PROGRAMMA REGIONALE
DI SCREENING COLORETTALE - dati anno 2009"

Il ruolo della telepatologia nel monitoraggio della qualità istologica

Paola Cassoni

Dip Scienze Biomediche e Oncologia umana
Università di Torino



***La necessità del QA nella
diagnostica istologica screening CRC***

***La telepatologia come strumento di
confronto: come e perchè***

Perché il QA nella diagnostica istologica di screening CRC?

- Bassa concordanza diagnostica sui parametri che identificano l'adenoma avanzato (grado displasia, villosità)
- Verifica delle diagnosi di adenoma cancerizzato



Lo strumento del QA è il confronto diagnostico

Original Paper

Inter-observer variation between general and specialist gastrointestinal pathologists when grading dysplasia in ulcerative colitis

Jayne Eaden^{1*}, Keith Abrams², Hugh McKay¹, Helen Denley³ and John Mayberry¹

¹Gastrointestinal Research Unit and Department of Pathology, Leicester General Hospital, Gwendolen Road, Leicester, LE5 4PW, UK

²Department of Epidemiology and Public Health, University of Leicester, 22–28 Princess Road West, Leicester, LE1 6TP, UK

³Department of Pathology, Nottingham City Hospital, Hucknall Road, Nottingham, NG5 1PB, UK

Table 2. Unweighted kappa values for the two groups of pathologists

	GI pathologists (n = 7)	General pathologists (n = 6)
Overall kappa (95% CI)	0.30 (0.26–0.34)	0.28 (0.23–0.32)
Kappa for high-grade dysplasia (95% CI)	0.54 (0.48–0.6)	0.61 (0.53–0.69)
Kappa for low-grade dysplasia (95% CI)	0.23 (0.17–0.29)	0.18 (0.10–0.26)
Kappa for reactive hyperplasia/cellular atypia (95% CI)	0.25 (0.19–0.31)	0.16 (0.08–0.24)
Kappa for 'none of these' category (95% CI)	0.16 (0.10–0.22)	0.14 (0.06–0.22)

The kappa values show poor inter-observer agreement, especially for low-grade dysplasia and reactive changes.

Letter to the Editor

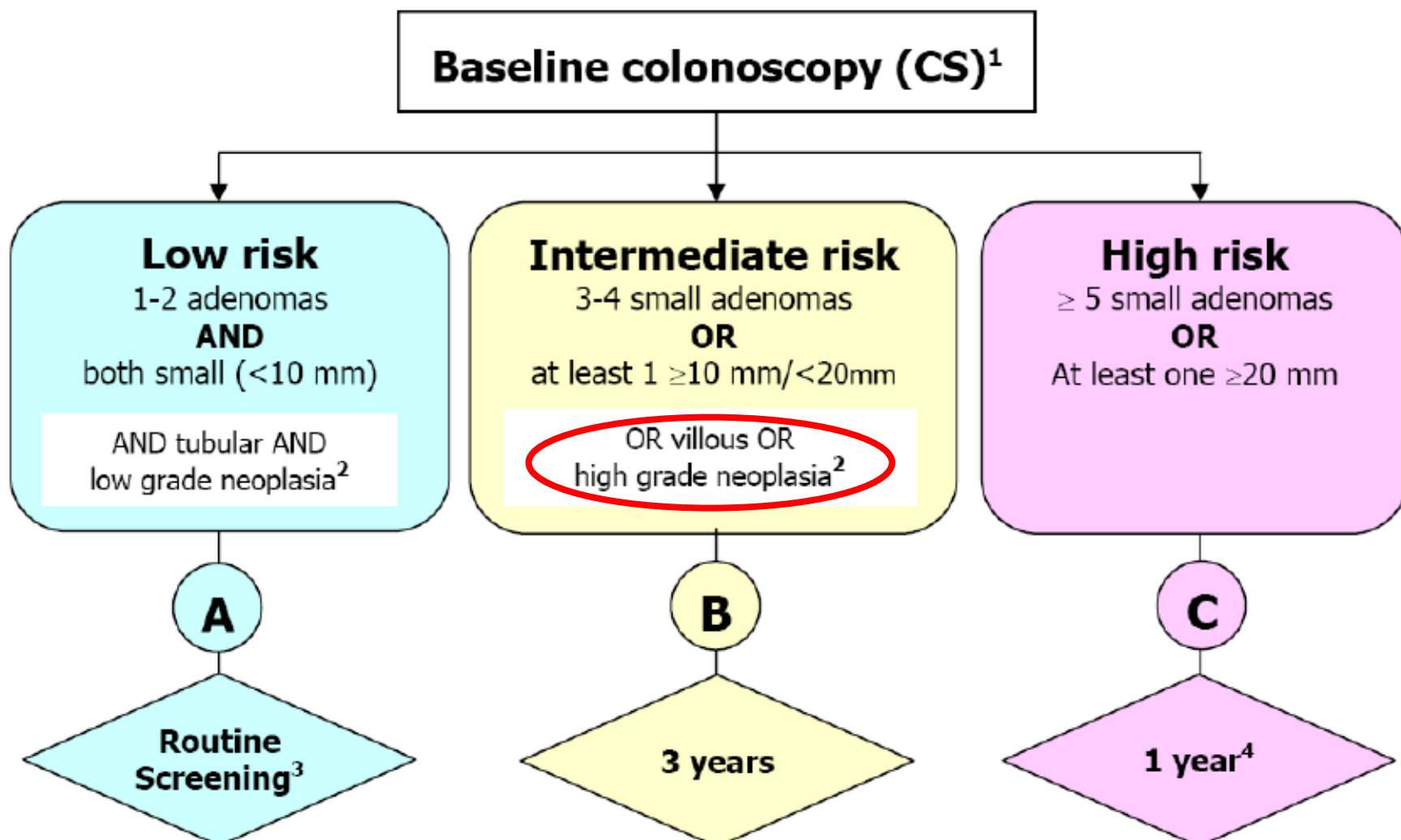
Comment on a recent paper and editorial on the subject of dysplasia classification

Table 1. Kappa values for the three diagnostic categories

Diagnostic category	Overall kappa	Overall kappa (4 cases excluded)
High-grade dysplasia	0.68	0.60 (SE 0.08)
Low-grade dysplasia	0.24	0.22 (SE 0.03)
No dysplasia	0.39	0.35 (SE 0.06)



COLONOSCOPIC SURVEILLANCE FOLLOWING ADENOMA REMOVAL (EU 2010)



CRC screening e QA: Second Opinion

Nell'ambito dei programmi di screening si ritiene raccomandabile prevedere la revisione da parte di un secondo patologo dei casi di adenoma cancerizzato, prima di decidere il tipo di trattamento, anche al fine di ridurre il rischio di sovratrattamento..."



7.7 Standards and quality indicators

There should be **good communication** between members of the screening team with agreed terminology, **regular meetings** and **clinical discussions**. (VI - B)

An external quality assurance programme should be put in place of a **minimum of two slide circulations** per year of an adequate numbers of slides. This may be via clusters or cells of pathologists **using glass slides**, or can be **electronic using either distributed images via DVD or the web** (see <http://www.virtualpathology.leeds.ac.uk>).

Cos'è la telepatologia

La **telepatologia** è la tecnologia che permette di trasmettere "immagini di microscopio" attraverso Internet.

The main **disadvantage** of static telepathology is being able to have one image at a time for any given magnification: the observer **cannot obtain a complete overview of the tissue specimen.**

 **Telepatologia statica**

La telepatologia dinamica= Microscopia virtuale

Digital virtual microscopy organises the acquisition process, by **scanning the whole histology slide at selected resolutions**, and provides the observer, through **real-time image compression**, with either the **overview image** or a series of microscopic images derived by **zooming in** on well-defined histological sectors

Rete Telepatologia del Piemonte

- La rete nasce nel 2006 e unisce 10 centri
- Nel 2009 si uniscono altri 2 centri

1. **Aosta** – Osp. Umberto Parini
2. **Biella** – Osp. Degli Infermi
3. **Candiolo (TO)** - IRCC
4. **Casale Monferrato (AL)** – Osp. S.Spirito
5. **Cuneo** – Osp. S.Croce
6. **Torino** – Osp. S.Anna
7. **Torino** – Osp. S.Giovanni Battista (Molinette)
8. **Torino** – Osp. S.Giovanni Battista Antica Sede (SGAS)
9. **Orbassano (TO)** - Ospedale S.Luigi
10. **Vercelli** – Osp. S.Andrea
11. **Alba** – Osp. Alba-Bra
12. **Savigliano** – Osp. SS. Annunziata



Rete Telepatologia del Piemonte

Acquisizione in digitale delle immagini microscopiche tramite strumenti dedicati:

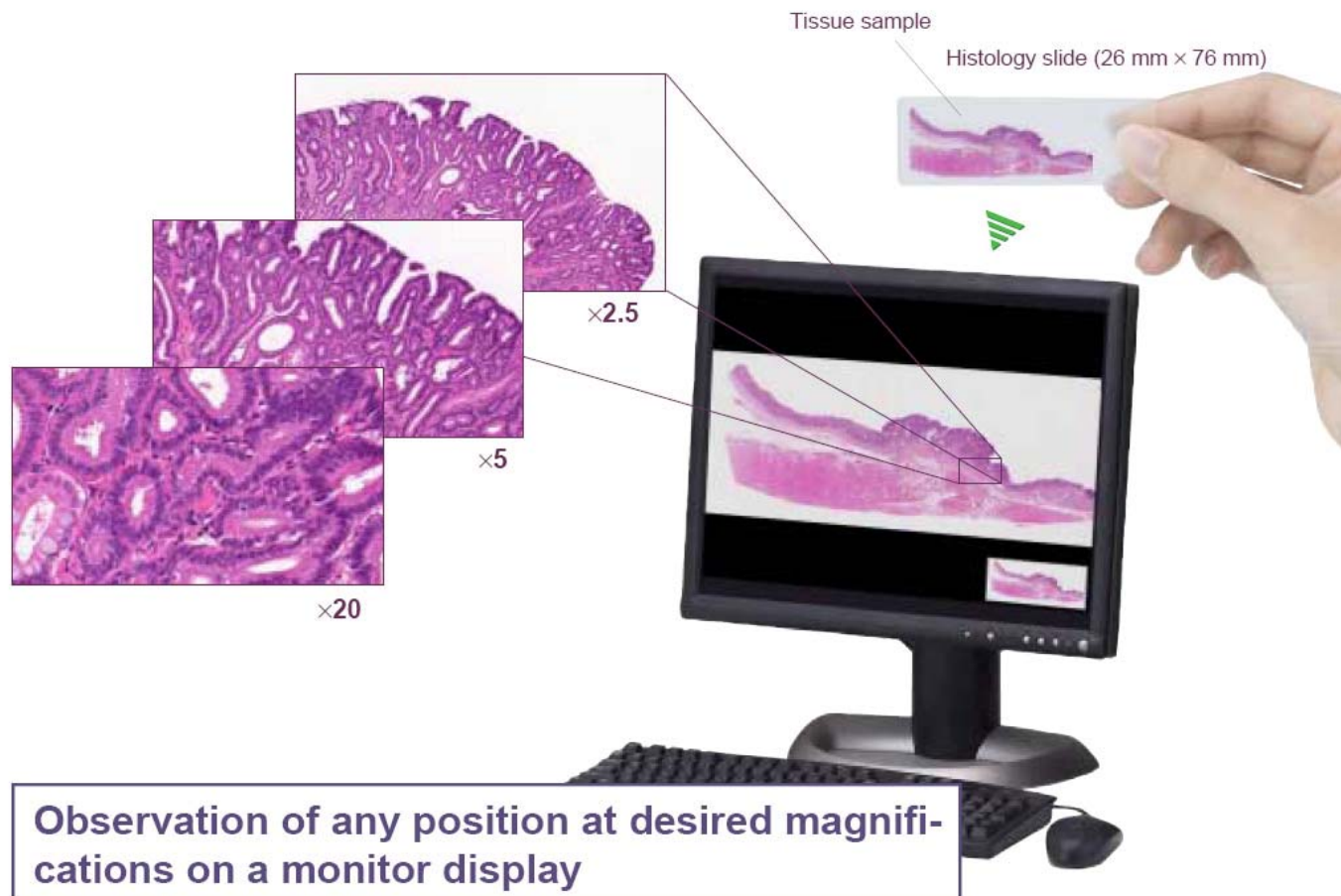
- Camera ad alta risoluzione
- Microscopio motorizzato
- Workstation e Software dedicati



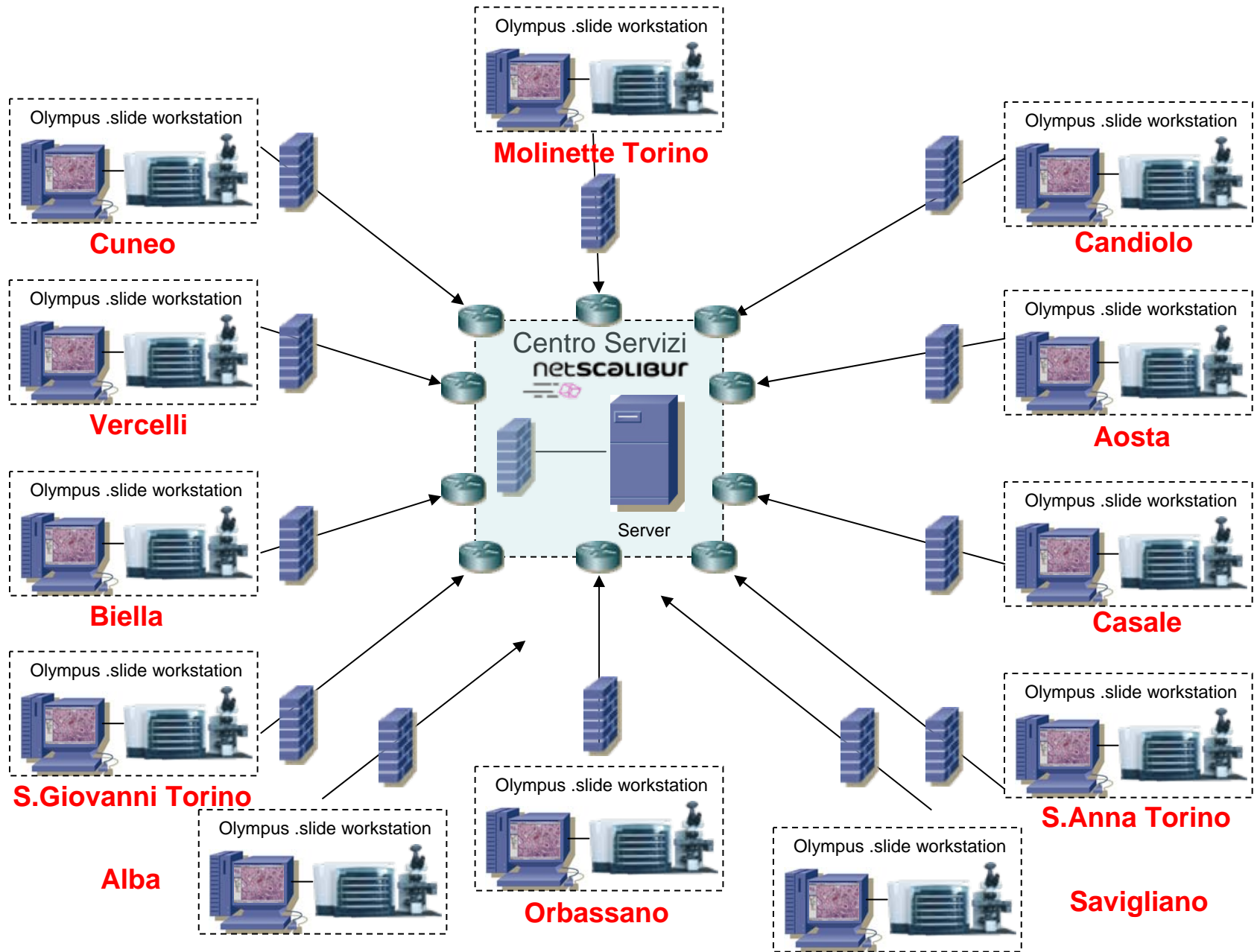
Olympus.dotslide

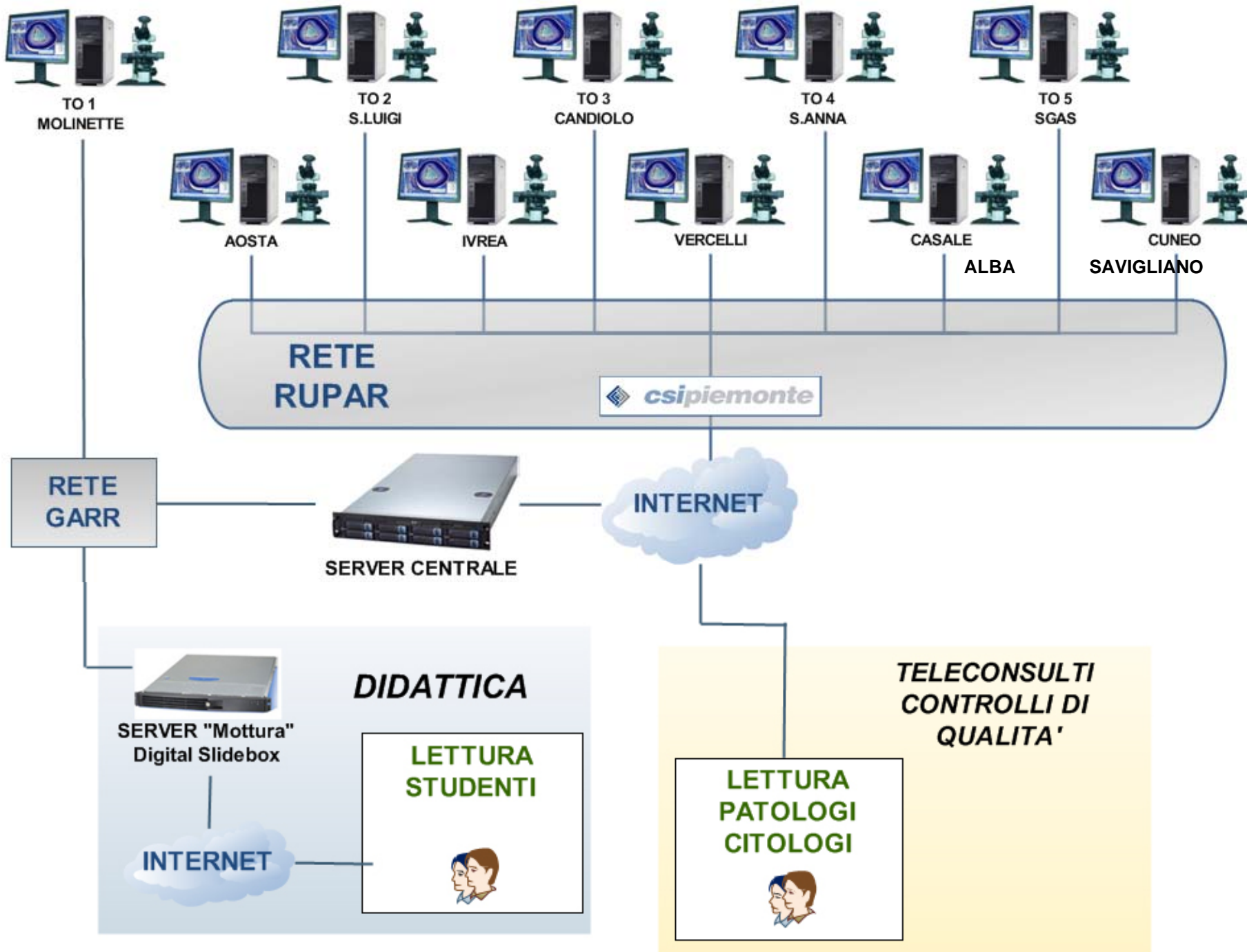
Rete Telepatologia del Piemonte

Il vetrino diventa “**virtuale**” in quanto l’immagine acquisita su computer è ad altissima risoluzione e visualizzabile agli stessi ingrandimenti che si trovano usando i microscopi tradizionali



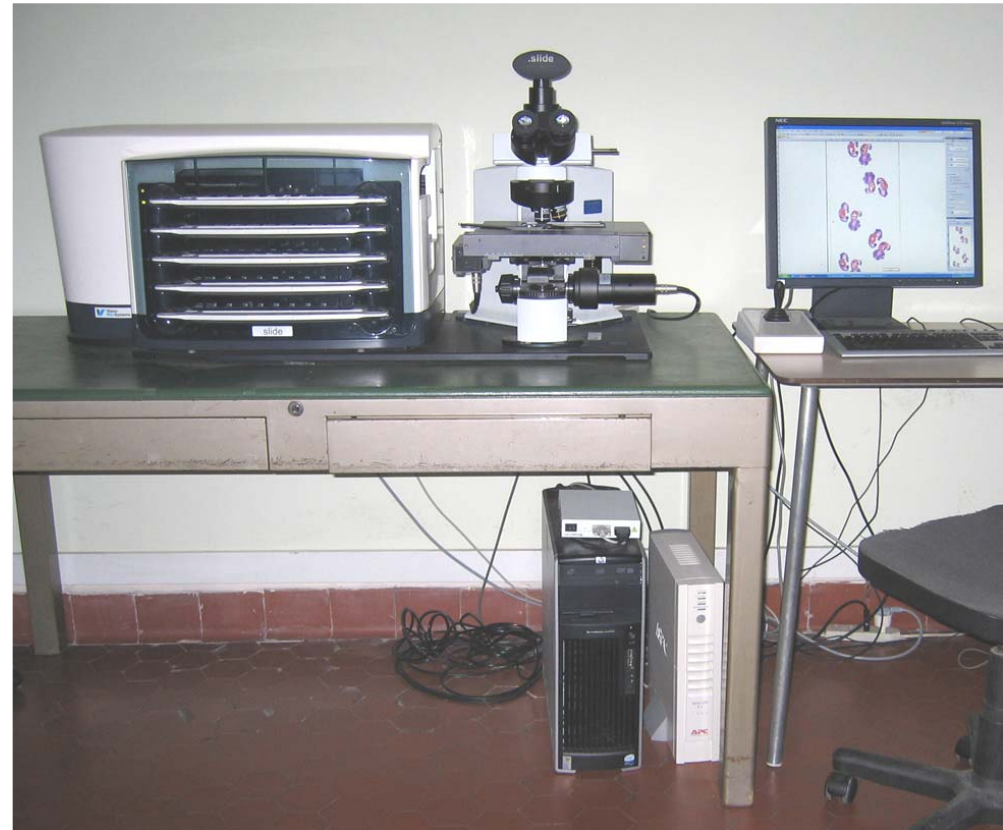
Progetto Network di Telepatologia Regione Piemonte





MICROSCOPIA VIRTUALE DIGITALE

- **RIDUZIONE DELLE DIFFICOLTÀ TECNICHE**
(taglio vetrini, distribuzione, ritardi di comunicazione....)
- **RIDUZIONE DEI COSTI**
(Allestimento, Trasmissione e Restituzione dei Preparati)
- **RIDUZIONE DEI TEMPI**



Virtual microscopy for histology quality assurance of screen-detected polyps

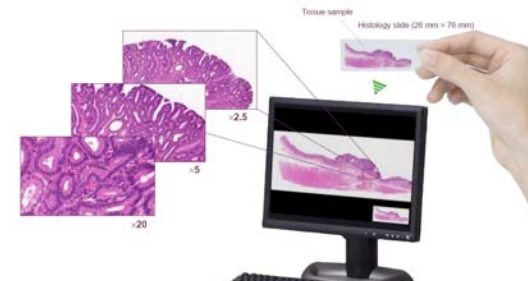
Mauro Risio,¹ Gianni Bussolati,² Carlo Senore,³ Stefano Vigna,² Elena Frangipane,¹ Nereo Segnan,³ Paola Cassoni²

Mat & meth

- 457 screen-detected lesions
- 2 pathology units involved
- 2 rounds (1yr interval):
 - 1° optical microscopy;
 - 2° virtual microscopy



<http://www.olympus4u.com/product/images/slide/sub/olyvia.GIF>



As suggested by Landis and Koch, agreement according to k values was:

<0.2 poor, 0.21-0.40 fair, 0.40-0.60 moderate, 0.61-0.80 good, >0.80 very good.

Intra-observer agreement

<i>A unit</i>	<i>Advanced</i>	<i>HG</i>	<i>Villous component</i>	<i>Hyperplastic/Sessile Serrated Lesion</i>
<i>Optical</i>	105	40	95	167
<i>Virtual</i>	108	54	81	151
<i>K statistics (95% CI)</i>	0,76	0,70	0,78	0,87

ONCOLOGY REPORTS 16: 1123-1129, 2006

Variability in the diagnosis of dysplasia in ulcerative colitis by dynamic telepathology

ROBERT D. ODZE¹, JOHN E. TOMASZEWSKI², EMMA E. FURTH², MICHAEL D. FELDMAN²,
RAIHANATOU DIALLO³, CHRISTOPHER POREMBA⁴, INGRID BECKER⁵, HEINZ HOEFLE⁴,
JOHN R. GOLDBLUM⁶, LISA A. RYBICKI⁷, NADA ALSAIGH⁸ and FRANZ FOGT²

Departments of Pathology, ¹Brigham and Women's Hospital, Boston, MA; ²University of Pennsylvania Presbyterian Medical Center, Philadelphia, PA, USA; ³University of Muenster; ⁴University of Duesseldorf; ⁵Technische University Munich, Germany; ⁶Cleveland Clinic; ⁷University of Cincinnati, OH; ⁸Dianon Systems, Stratford, CT, USA

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Inter-observer agreement

<i>Optical</i>	<i>Advanced</i>	<i>HG</i>	<i>Villous component</i>	<i>Hyperplastic/Sessile Serrated Lesion</i>
<i>A</i>	105	40	95	167
<i>B</i>	112	99	57	153
<i>K statistics (95% CI)</i>	0,63	0,42	0,52	0,77

<i>Virtual</i>	<i>Advanced</i>	<i>HG</i>	<i>Villous component</i>	<i>Hyperplastic/Sessile Serrated Lesion</i>
<i>A</i>	108	54	81	151
<i>B</i>	117	101	62	147
<i>K statistics (95% CI)</i>	0,65	0,39	0,66	0,79

Gli strumenti del confronto

- La microscopia virtuale è uno strumento **efficace** per QA nei programmi di screening CRC
- L'**accuratezza** diagnostica della microscopia virtuale è sovrapponibile o superiore a quella ottica per la validazione dei criteri di screening cruciali per la gestione del paziente

QA e confronto per la validazione di nuovi parametri

Table 2 Multivariate analysis of risk factors for lymph node metastasis

<i>Factors</i>	<i>Odds ratio</i>	<i>95% CI</i>	<i>P-value</i>
Lymphatic invasion (+) vs lymphatic invasion (–)	3.19	0.22–0.94	<0.01
Well differentiation vs moderate/poor differentiation	3.02	0.20–0.90	<0.01
Tumor budding (+) vs tumor budding (–)	2.59	0.12–0.83	<0.01

Pathological prognostic factors predicting lymph node metastasis in submucosal invasive (T1) colorectal carcinoma

Yoko Tateishi^{1,4}, Yukihiro Nakanishi^{2,5}, Hirokazu Taniguchi¹, Tadakazu Shimoda¹ and Satoshi Umemura³