

# Workshop of hepatic cytology

with references to its histopathological foundations

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**Brescia**



# Introduction

- Cytology is today used by clinicians, because its usefulness in diagnosis of a lot of primary pathological conditions, mostly neoplastic diseases.
- Although diagnostic for many diseases, cytology is still infrequently used in evaluation of some organs, like the liver
- Although hepatic cytology should provide a lot of information about primary pathological process, its usefulness is still underestimated and by-passed in diagnosis of many hepatic diseases by direct histopathological evaluation

# Aim of the workshop

- The target of the workshop are:
  - To provide cytological bases in better understanding the primary and secondary pathological process of liver diseases
  - To improve the skill of an **expert cytopathologist** in interpretation of hepatic diseases by cytological examination
  - To provide the tools for correctly report writing
  - To properly address the clinical management

# Content of the workshop

- Lecturers about the most important cytological changes of hepatocytes and biliary cells
- Evaluation, by the microscope, of cytological cases that encompass a broad selection of frequent pathological conditions, comprehensive of:
  - Historical, hematological, biochemical and ultrasonographic data
  - Cytological sample
  - Correspondent histological slide, in order to compare the cytological features with the final diagnosis

# Content of the workshop

- Contents of the lecturers:
  - Cytological features of hepatocellular non neoplastic changes
  - Cytological features of hepatic inflammatory diseases
  - Cytological features of hepatic chronic diseases
  - Cytological features of biliary diseases
  - Cytological features of neoplastic diseases

# Program of the workshop

- First day

- Lecture: “Cytological evaluation of hepatocytes – normal and pathological changes”
- Lecture: “Cytological evaluation of biliary cells, Kupffer cells and stellate cells – normal and pathological changes”
- Lecture: “Cytological evaluation of neoplastic diseases”
  
- Cases of hepatic pathology: evaluation, by microscope, of cytological slides – part I

- Second day

- Cases of hepatic pathology: evaluation, by microscope, of cytological slides – part II
- Cases of hepatic pathology: evaluation, by microscope, of cytological slides – part III
  
- Main discussion and interpretation of all the selected cases

Workshop of hepatic cytology and histopathological bases - 2021

## CYTOPLASMIC CHANGES OF HEPATOCYTE

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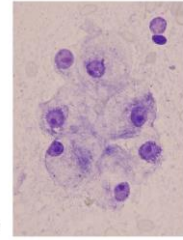
Many topics in hepatic cytopathology are discussed on the base of morphological changes and correspondent pathological processes and differential causes

Topics are always discussed on the base of many high quality images

Whenever necessary a complete review of the evidence-based bibliography is discussed

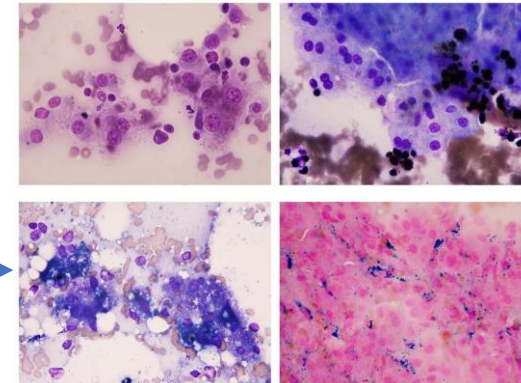
### Glycogen accumulation

- Also known as *steroid-induced hepatopathy*
- Accumulation of glycogen within the cytoplasm
- Induced by either exogenous and endogenous glucocorticoids
- The result is swelling of cytoplasm, that appear clear, without displacement of nucleus
- PAS and PAS Dyastase in differentiation with water accumulation



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**Objective**—To determine disorders associated with vacuolar hepatopathy (VH), morphologic hepatic and clinicopathologic abnormalities, and affiliation with steroidogenic hormone excess in dogs.

**Design**—Retrospective case series.

**Animals**—336 dogs with histologically confirmed moderate or severe VH.

**Procedure**—Information on signalment, results of diagnostic testing, definitive diagnoses, and exposure to glucocorticoids (ie, exogenous glucocorticoid administration or high endogenous concentrations of steroidogenic hormones) was obtained from medical records. Dogs were grouped by underlying disorder, glucocorticoid exposure, acinar zonal distribution of lesions, and histologic severity.

**Results**—12 disease groups (neoplastic, acquired hepatobiliary, neurologic, immune-mediated, gastrointestinal tract, renal, infectious, cardiac disease, diabetes mellitus, portosystemic vascular anomaly, adrenal gland dysfunction, and miscellaneous disorders) were identified. There were 188 (56%) dogs with and 150 (45%) dogs without evidence of glucocorticoid exposure. Acinar zonal distribution of hepatic vacuolation and clinicopathologic values did not differ between dogs with and without evidence of glucocorticoid exposure. However, a 3-fold increased likelihood of severe VH was associated with steroidogenic hormone exposure. Of 226 dogs with high serum alkaline phosphatase activity, 102 (45%) had no evidence of glucocorticoid exposure.

**Conclusions and Clinical Relevance**—Results suggest that neoplasia and congenital or acquired hepatobiliary disease are common in dogs with VH and provide support for the suggestion that VH, high alkaline phosphatase activity, and illness-invoked physiologic stress may be associated. Histologic confirmation of VH should initiate a diagnostic search for a primary disease if glucocorticoid treatment and hyperadrenocorticism are ruled out. *J Am Vet Med Assoc* 2006;229:248–252

#### Vacuolar hepatopathy in dogs: 336 cases (1993–2005)

Lisa M. Sepevy, DVM, DACVP, Shannon A. Center, DVM, DACVP, John F. Ranaldi, DVM, DACVP, Karen L. Warren, DVM, PhD, MS, DACVP

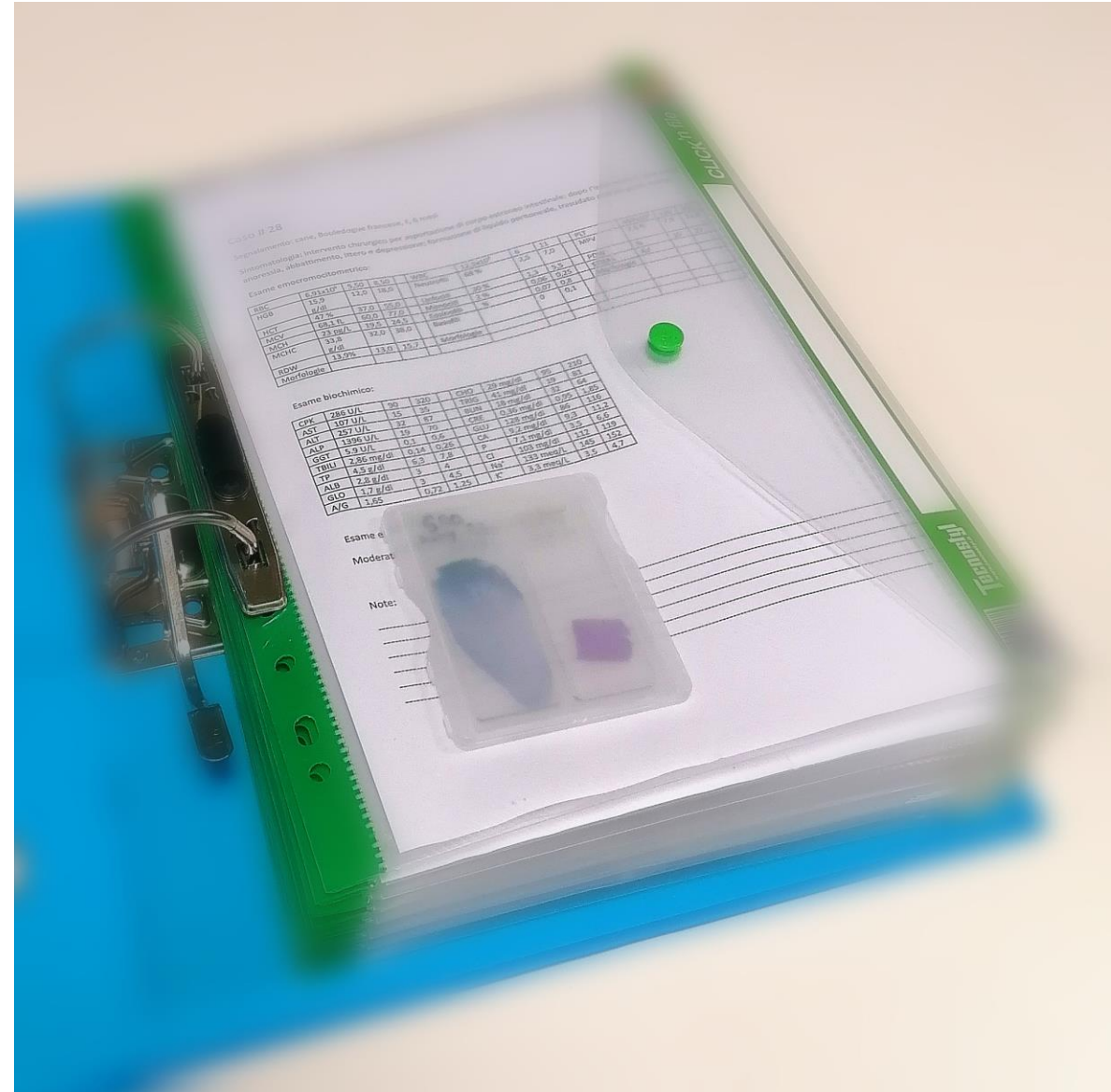
*JAVMA*, Vol 229, No. 2, July 15, 2006

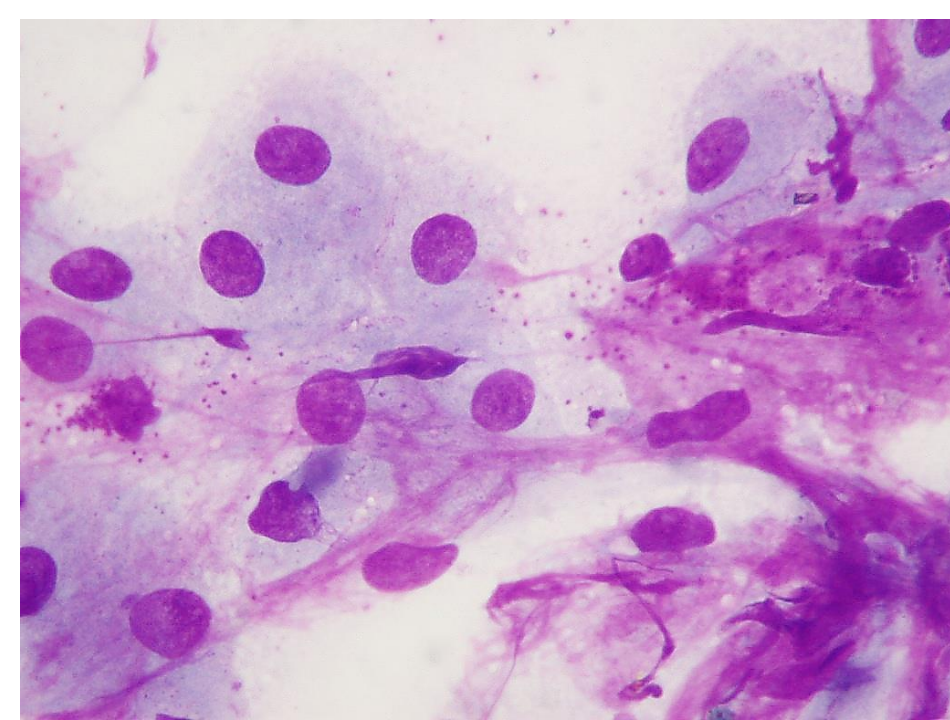
Vacuolar hepatopathy is a common hepatic disorder in dogs that typically is associated with glucocorticoid excess. In an unpublished review of 500

#### Criteria for Selection of Cases

Medical records of the Cornell University Hospital for Animals were electronically searched to identify all dogs examined between 1993 and 2005 in which a histologic diagnosis of VH (steroid hepatopathy, glucocorticoid hepatopathy, hepatocellular degeneration, hepatocellular steatosis, or hepatocellular lipodosis) had been made. Tissue sections for each case identified

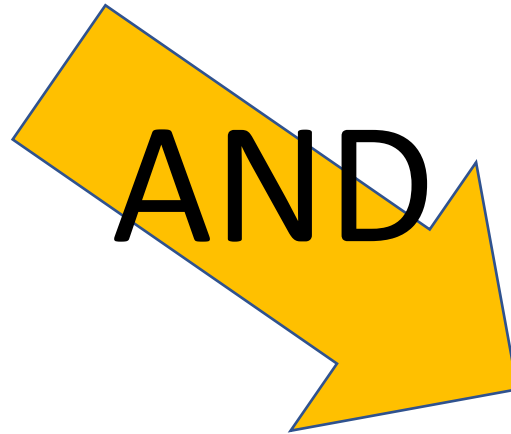
Round about 30 cytological cases with a complete description of the clinical data, related with a slide of histological sample of pathological parenchyma, for comparison



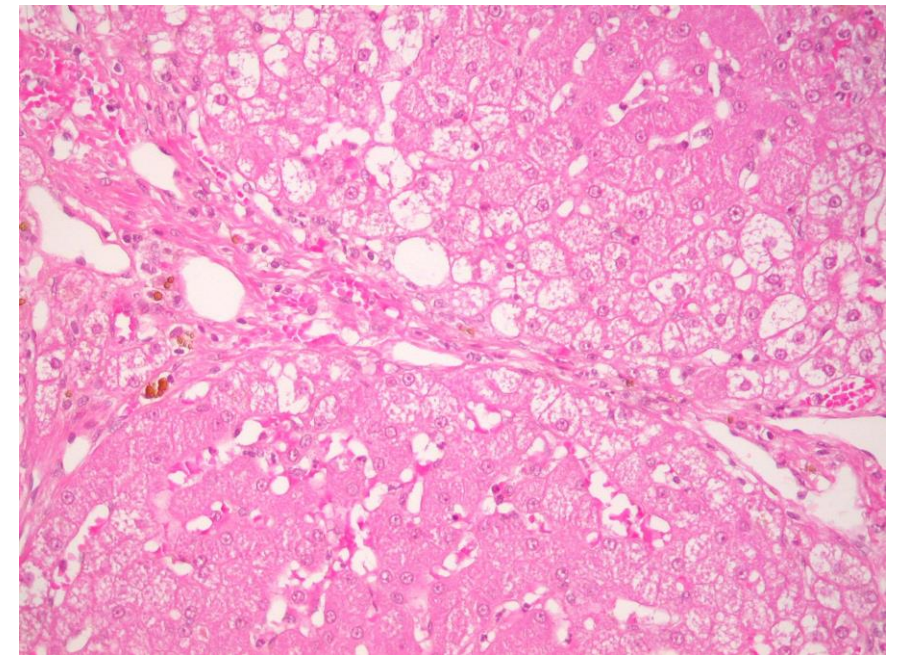


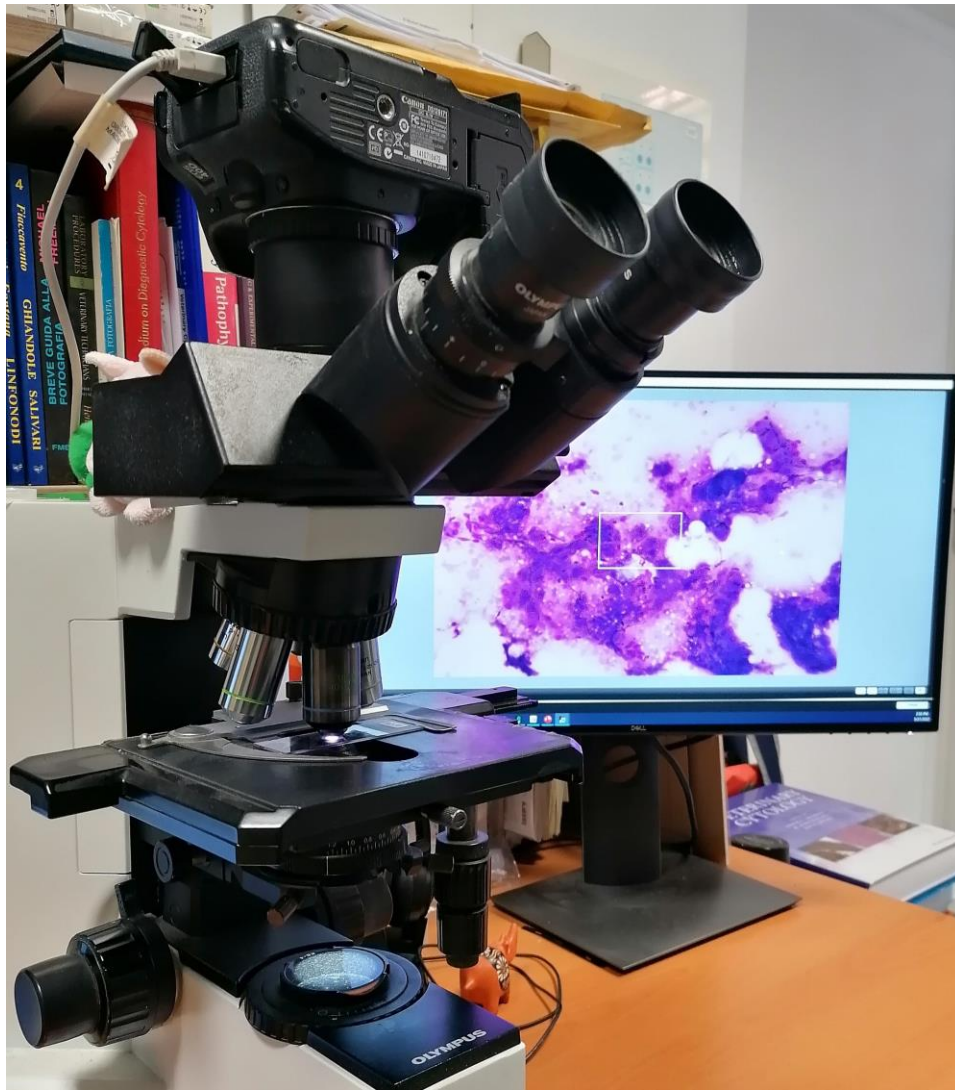
For each cytological case, the participants can:

- Evaluate the cyto slide
- Collect the most relevant features for a cytological diagnosis
- Compare this features with clinical data



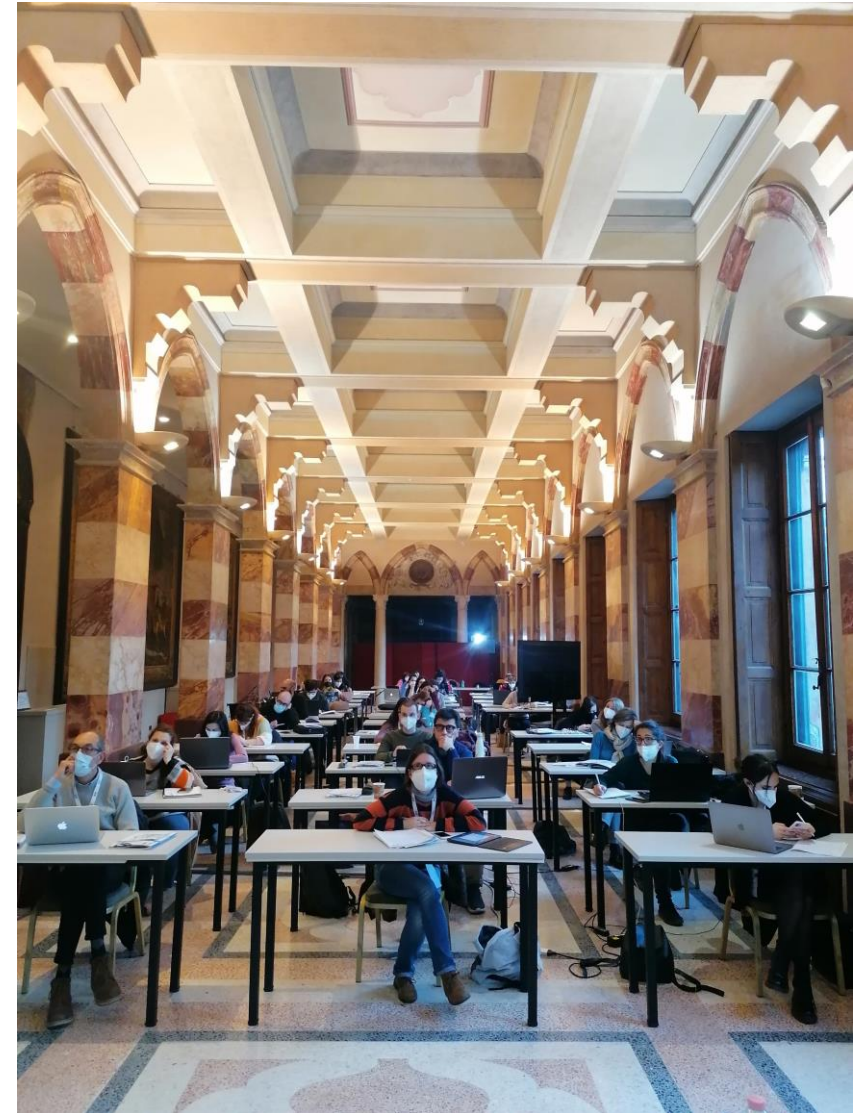
To compare the cytological features with the correspondent histological slide and final diagnosis.





During the last part of the workshop, each case is reviewed, discussed and widely analyzed with projection of the slides on a screen

All the attendees can participate to the main discussion, ask for explanations of difficult cases and share comments



# The author

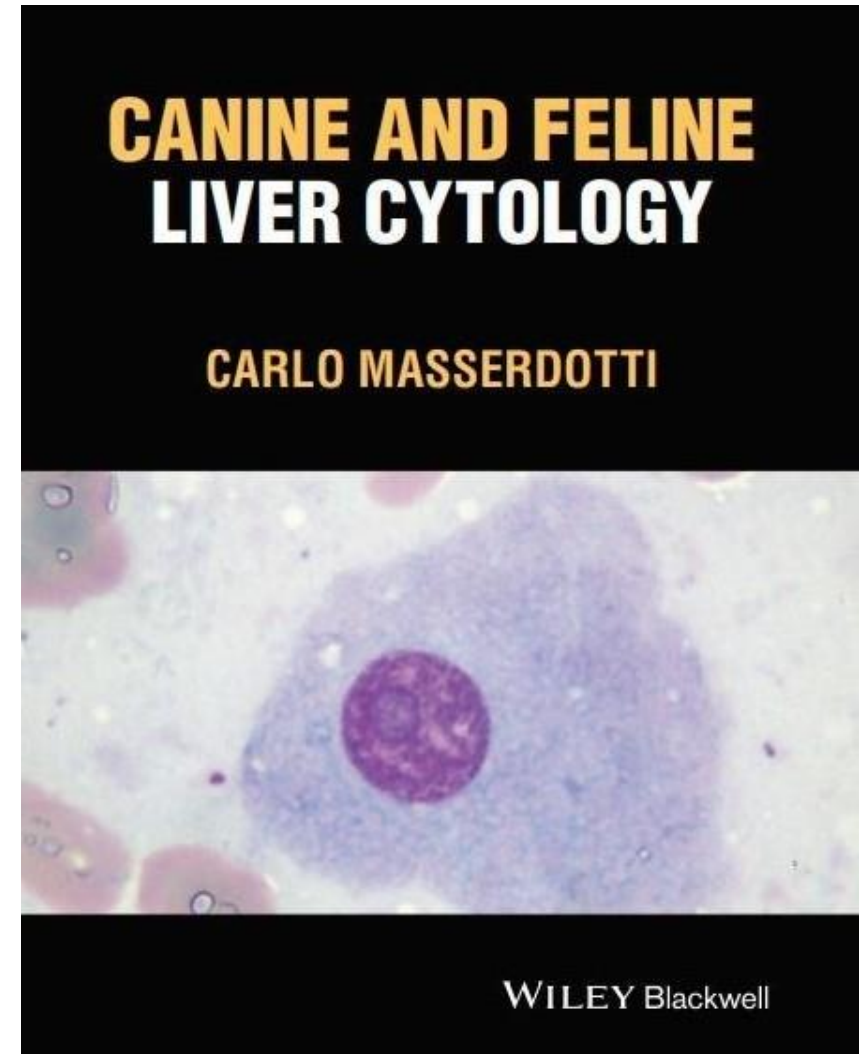
- Carlo Masserdotti graduated in Veterinary Medicine in 1990 at the University of Milan.
- From 1993 his interest was mainly focused on clinical pathology, particularly in diagnostic cytopathology, attending specialistic courses and references institutions in Italy and in foreign countries. He is author of scientific papers concerning cytopathology and he had some lectures at national and international meetings.
- From 1998 he is teacher and lecturer at course of Cytology, organized by SCIVAC.
- From 2001 to 2004 he was President of SICIV (Italian Society of Veterinary Cytology).
- From 2003 to 2006 he was Vice-president of European Society of Veterinary Clinical Pathology.
- In 2005 he received the de-facto recognition as Diplomate of the European College of Veterinary Clinical Pathology.
- In 2008 achieves post-graduate Specialization in Clinical Biochemistry, at the University of Brescia.
- Actually he is consultant in anatomic and clinical pathology at IDEXX Laboratories.
- His researchs was mainly focused on cytologic features of spontaneous tumors and inflammatory diseases of companion animals; currently the scientific interest is mainly in hepatic cytology and histopathology.

# The Author

- Carlo Masserdotti is the author of the book

LIVER CYTOLOGY OF THE DOG  
AND THE CAT

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